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Which President?

That prolific source of corporation rumors, the Boston *News Bureau* quotes:

"'One who is closely identified with both the telephone and telegraph companies, and in a position to know what is going on,' as saying: 'Some people think that they can see a tendency toward a consolidation of the American Telephone & Telegraph Company, the Mackay Companies, and the Western Union Company. Such observations are partially correct, but it will not take the form of any actual consolidation of the telegraph and telephone companies. The Western Union Telegraph Company has 23,000 branch offices throughout the United States. The maintenance of these branch offices is a great tax upon the income of the company because a great many of them are run at a loss. The Postal Telegraph people have confined their operations to the larger towns and cities of the United States, and thereby have kept down their operating charges. When the new policy of concentration goes into effect there will not be three offices in many of the cities and towns, but one office for both telephone and telegraph companies, and such concentration alone will effect enormous savings. There will also be a community of interest in the use of wires, particularly the use of wires under ground, because there is no legitjmate reason why there should be three wires, two telegraphs and one telephone at a point where one would do. Great credit is due Mr. Vail of the telephone company for his diplomacy in bringing the managers of rival telegraph companies to his way of thinking. The outcome will be to strengthen all three of the companies.'"

The statement that there will not be any "actual" consolidation is interesting. This question of consolidations which eliminate competition, it will be remembered, is one which was touched upon by President Taft in his Des Moines speech. We think most of our readers will be inclined to scan his words with special care; here they are:

"While we have not thrashed the whole matter out so as to reach a definite conclusion, I am strongly inclined to the view that the way to make the anti-trust law more effective is to narrow its scope somewhat, so that it shall not include in its prohibition and denunciation as a crime anything but a conspiracy or combination or contract entered into with actual intent to monopolize or suppress competition in interstate trade.

"At the common law all contracts in restraint of trade except those which were called reasonable, the courts would decline to enforce.

"The anti-trust law denounces such contracts in restraint of interstate trade as criminal, whether made with intent to monopolize or to suppress competition, or without intent to do either.

"The theory seemed to be that a contract in restraint of interstate trade tended to a monopoly, and therefore should be denounced because of its tendency, whether there was any actual purpose on the part of the person making it to monopolize or suppress competition or not.

"This feature of the present anti-trust law has, it seems to me, weakened its force, because it has seemed to bring within the condemnation of the law contracts and other arrangements which were actually innocent in their character, and which were not included in those various combinations which it was the real intent of the law to suppress.

"If the crimes denounced in the law were confined to combinations, conspiracies and contracts made with intent to monopolize or partially monopolize interstate trade or to suppress competition in interstate trade, then the real object of the law would come within its denunciation, and no one could declare its opinion to be unreasonable in that it included a lot of innocent contracts or arrangements.

"It has been suggested that the law ought to limit its denunciation to those contracts in restraint of trade that are unreasonable. I do not favor any such limitation. It seems to be proposed to leave to the judges to decide what combinations and contracts in restraint of trade ought to be permitted to exist and to be enforced on general grounds of public policy—in other words, to have the court attempt to establish some lines between what are called good and bad trusts, as if the suppression of competition in some cases was a good thing and in other cases was bad. I cannot agree that any such discrimination can be properly made.

"All combinations to suppress competition, or to maintain a monopoly in whole or in part of interstate trade are and should be in violation of the anti-trust law and should be punished as such; and there is no room for the expression —reasonable or unreasonable—in this general view of the statute."

Today the Postal and Western Union Telegraph Companies are, at least ostensibly, competitors. The Postal company conveys more than a broad suggestion of this idea in the signs which it so prominently displays in its offices.

The activities ascribed to President Vail do not seem to be in line with the policy laid down by President Taft. They are both big men, accustomed to get results. But we incline to the opinion that President Taft is the man who controls the more powerful machinery.

Not Buying Lawsuits.

There is a risk in going into side lines. It may detract attention from the main pursuit. When an official of a Bell telephone company was lining up plans for swallowing a competitor, in one of those set pieces that went off with a fizzle a few weeks ago, he said: "We must have all the stock. We don't want to buy any lawsuit." But, as things are working, it is hard to tell just when a lawsuit will be tied up in the package that is ready for delivery, when delivery means the elimination of competition.

Infringing the Privileges of Youth.

We have always advocated the extension of telephone service to embrace all fields of activity. We have tried to help the work along by pointing out new uses, and chronicling them when discovered by others. Among the possibilities which loomed bright before our eyes was the immense benefit of a telephone in every school room. What a boon in case of sudden illness, a storm, or any emergency! We believe in discipline, and saw the possibilities of improving the conduct of recalcitrant youngsters by a timely conversation between teacher and parent.

But a good thing may be carried too far. A newspaper published in Salem, Mass., says: "Nehemiak Heron, the veteran truant officer of Beverly, rounded up five boys at the circus the other day, in response to a telephone message from the teacher, and sent them back to school."

When a telephone tears a boy away from the circus it is time to wrest it from the wall and cast it out the window. If a kid can't play hookey to go to the circus, what's the use of living? But Salem was the place where they burned the witches, and Nehemiak is undoubtedly a throwback to the Puritan period. There's hope for the rest of the world.

Where Malice Fails.

The progress of this country has been due to the somewhat remarkably developed ability of its people to distinguish between the true and the false. Lincoln expressed his perception of this in an inimitably shrewd sentence. So, when we read some of the attacks upon the financial integrity of Independent companies which have founded their business upon sound methods of meeting a public demand, our feeling of contempt is tempered by amusement at the ridiculousness and futility of this petty spite.

Financial papers which publish venemous and untruthful statements about our Independent telephone companies may think they are building sentiment in favor of the interests which pay for the printer's ink. We may think that the parties attacked would be doing a public service by exposing the whole transaction. But, after all, the public sees through the trick, and despises the envious self-interest which inspires these pop-gun attacks in the dark.

The Federal Telephone & Telegraph Company, which covers most of Western New York with a solidly built system, is one of many which has quietly gone its way unmindful of the spit balls of its competitor. Now the competitor is throwing out ink to cover its own financial condition. The report of the Federal company, printed on another page, is a frank statement of facts. A company which adopts the policy of delivering the goods in this way is likely to stand high before a public which compares its statements—which are prima facie evidence of soundness—with the weakness and fear revealed by a competitor's campaign of slander in venal publications.

LIBRARY

When Reconstruction Pays

By Ormond F. Cassaday

A switchboard properly designed and equipped will, in the hands of a careful trouble man, give but very little trouble or expense in its maintenance.

On the other hand, where the engineer does not use proper judgment in designing the cabinet and locates the apparatus where it is not easily accessible, or, as is illustrated in Fig. 1, places the connecting rack where the punchings and skinners are repeatedly jammed by the cord weights, the board will certainly depreciate to a point where its operation is an uncertain quantity, causing no end of grief from a service standpoint.

Fig. 1, for which a photograph was taken after the work was under way, shows the condition of a board the writer was called upon to reconstruct. The canvas aprons shown represent the trouble man's ingenious method of keeping the cord weights from battering the punchings on the connecting rack.

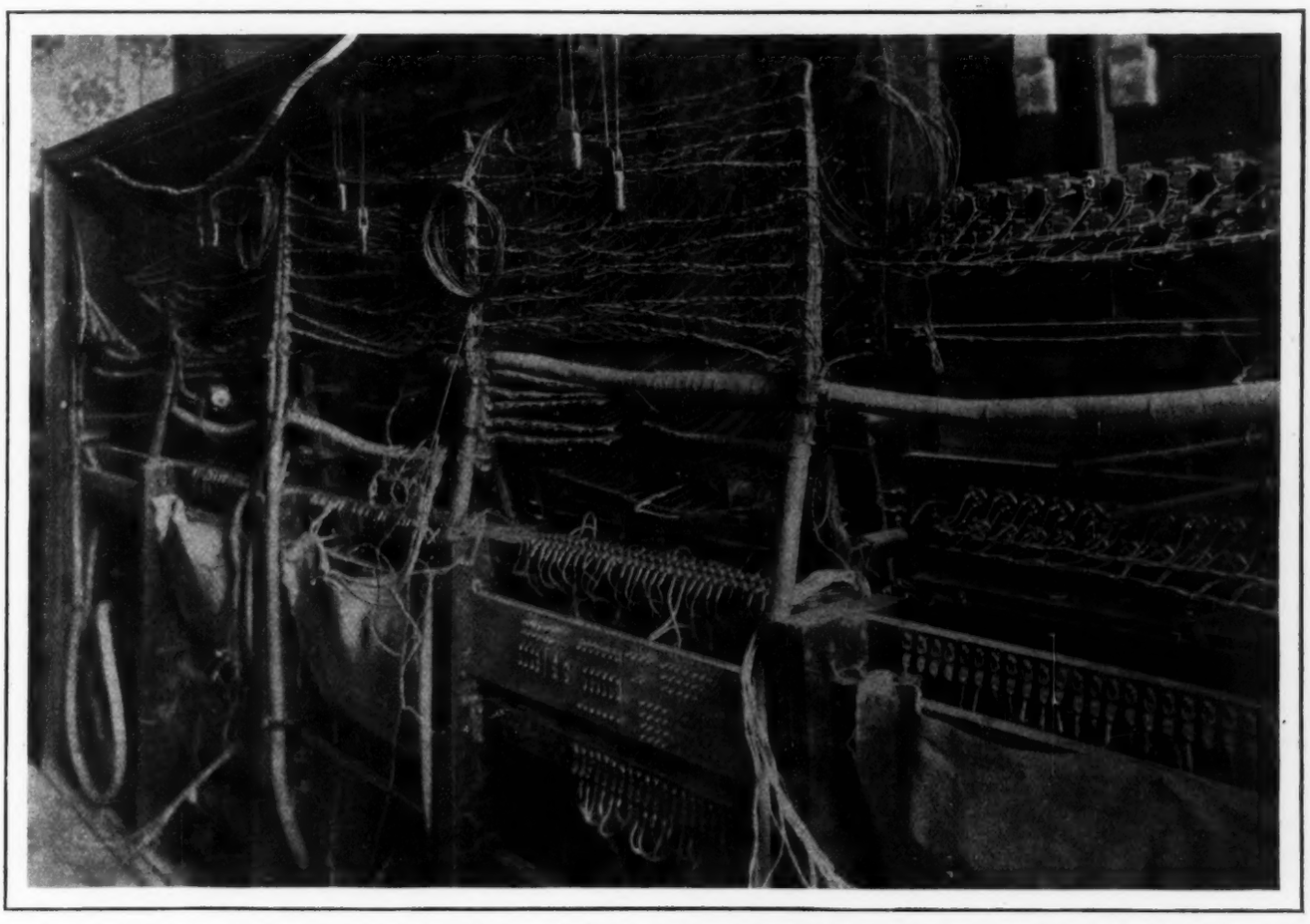


Fig. 1. Illustration of Poor Arrangement of Wiring on a Switch board. Note the Aprons used to Prevent the Cord Weights from Battering the Punchings on the Connecting Rack.

The front view, Fig. 2, shows the condition of the key cables, the lacings having been ripped out, evidently for the purpose of killing the pole changer noise on the operator's circuit, which was not properly wired in twisted pairs.

This equipment is of the express transfer type, the transmitters and transfer lamps operating from a 4-volt storage battery. The board was installed in the fall of 1904. Since the installation it has twice been necessary to completely renew the drops. First, for the reason that subscribers could not ring "Central," owing to the defective contact of the cut-off spring, which was merely a punched projection of the spring itself, and not a platinum point.

The second change was made necessary owing to the weight of the cord throwing the tip jack spring against the metal portion of the associated drop, thereby grounding the line. In order to eliminate this trouble, the tip spring on the new jack was placed so that the insertion of the plug passed over the spring instead of under it.

Good service was next to impossible, parties being hung up on transfers on account of defective plug switches, and in many cases unable to get loose after being connected, due to the adjustment of the clearing-out drops. Unnecessary trips were made on complaints of "Can't call central," "Cut-out" and "Can't raise subscribers," thus incurring a heavy livery expense when the fault was in the exchange.

In order to improve the service and permanently clear up the trouble, the only alternative was to replace the plug switches, rearrange the connecting racks, and in fact give the board a thorough overhauling.

The operators' circuits were properly rewired, thereby killing the generator noise. The location of the plug ended transfers was changed to prevent the transfer cords from tangling with the subscribers' cords. The storage battery voltage was increased to 24 volts and all necessary appara-

tus installed and circuits were changed for this service.

The telephone company was advised to install a non-interfering cord circuit by replacing the bridging drop coil with a double wound coil and insert condensers in the tip and sleeve between each winding. In testing this arrangement it was found that there was considerable interference, more noticeable when grounded lines were connected.

Limited mounting space would not permit installing double drops and condensers. To obtain the non-interfering feature with single clearing-out drops, several tests were made, which finally lead to a double wound coil, cut in the cord circuit as a repeating coil. This, under general service condition is non-interfering, and gives a good talking circuit locally, the toll being handled through transfers,

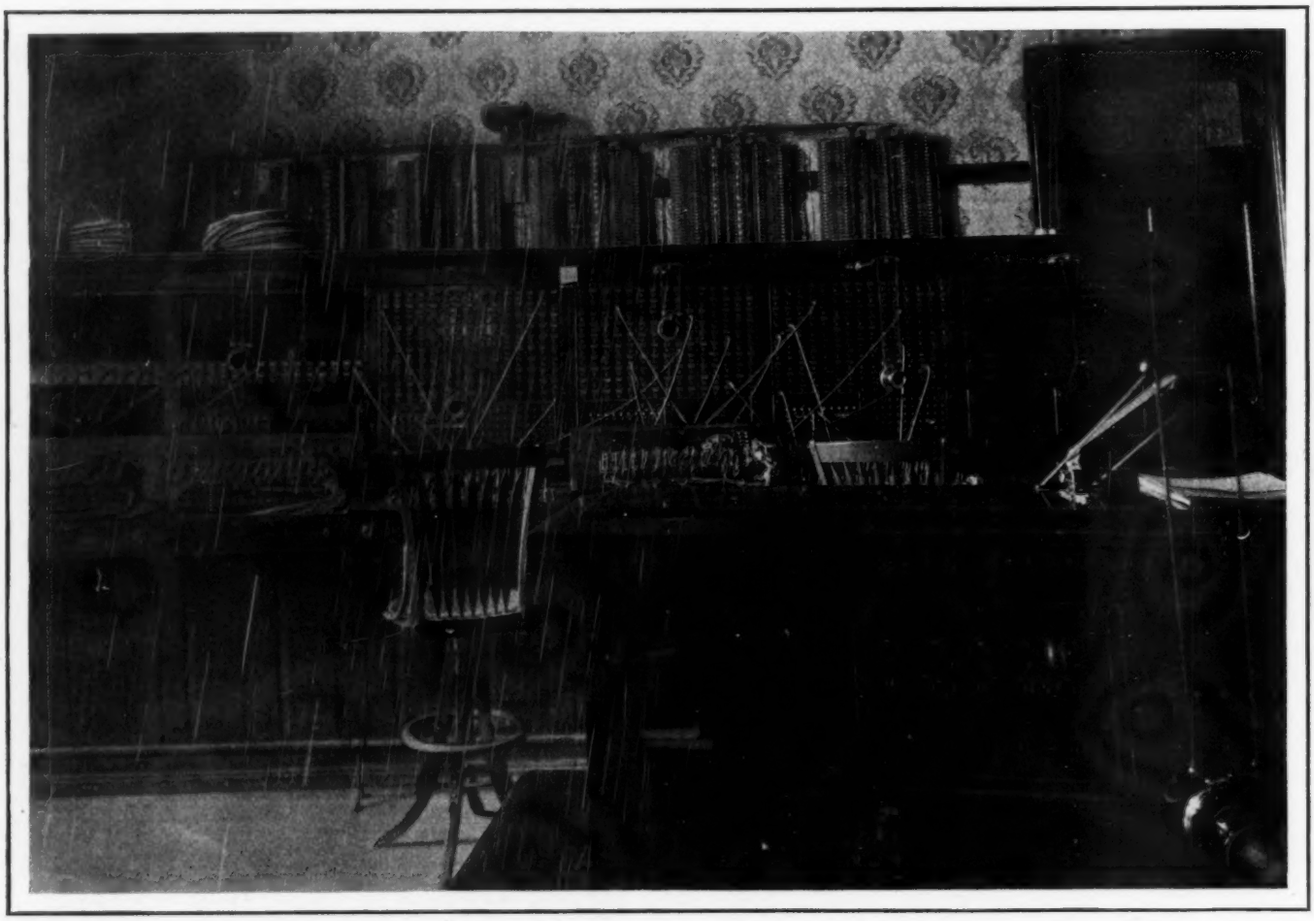


Fig. 2. Front View of Poorly Wired Switchboard Showing Where Lacing of Key Cables had been Ripped out in Effort to Kill Pole Changer Noise Which Could Have Been Avoided by Properly Wiring with Twisted Pair Wire.

although excellent 200-mile talks are put up on this "drop repeater cord circuit," when the toll lines are switched to the local board for night service.

Figs. 3 and 4 show the front and rear view of the board after the work was completed. One Independent manufacturing company, which supplied all the material, gave advice that saved considerable on the cost.

Fig. 5 shows the power switchboard, having the pole changers mounted thereon in duplicate. The Warners are used for positive and negative selective ringing. The A. C. ringers consist of two-transformer type pole changers and a transformer operated on 11 C-T storage cells, and has more than paid for itself in the saving of dry batteries.

The fact that the reconstruction of switchboards that are in this same condition improves the service and reduces the maintenance shows that the cost is entirely justifiable, not to mention prolonging the life of the equipment.

The Use and Construction of Concrete Poles.

By W. M. Bailey.

Concrete is not a new product, it was known and used by the ancient Greeks and Romans thousands of years ago, and now science has come to the conclusion that the great pyramids of Egypt were also built of concrete and not of stone as was first supposed. There were also a number of other old concrete structures in foreign countries that tell the tale and prove beyond a doubt that there is no building material that will withstand the test of time and the destructive elements so well as concrete. Therefore, it is useless to waste time discussing this durability, as we all will have to admit this.

The question before us is:—How can we use this material to advantage in the construction of telephone properties? One of the greatest expenses in connection with the construction of a telephone plant is the pole leads, which are now universally built of wooden poles, and at great expense these poles are prepared and set. Do we ever stop to think that this work at its best is but temporary, and at the expiration of ten or twelve years they must be taken down and new ones installed at an expense considerably greater than the installation of the original pole? Consider a period of fifty years and see what this means. It requires between three and four millions of poles annually to take care of this depreciation in the United States alone, at an expense for the poles alone amounting to between thirteen and fourteen millions of dollars. This is rapidly increasing, as the largest portion of our pole leads have been built within the last ten years.

We turn to iron, but this will not meet the requirements, as its first cost is extremely high and its life not very much longer than the wood. So there is but one material left that will fill the bill and that is concrete, as this produces a substantial,

beautiful and permanent construction at a reasonable cost, and good for we know not how long, as we can only judge the future by the past. Concrete construction of all characters has been in use for thousands of years and some of the oldest structures are still in good condition.

I have given the matter considerable time and thought and have made a number of experiments with concrete poles during the past three years and wish to set forth briefly the results.

Early in the winter of 1906 I conceived the idea that concrete could probably be used for telephone poles and, like all Americans, I had many misgivings and found that I was "from Missouri" and had to be shown.

It was on October 7 of the same year that I made a form, horizontally, thirty feet long and placed four half inch twisted steel rods in each of the four corners. The forms tapered from twelve inches at the bottom to seven inches at the top and the four corners were filled in with triangular pieces of wood, so as to create a finished pole with chamfered corners. I then had the concrete mixed very soft, and thoroughly tamped into the form. This was left to harden, and on Thanksgiving Day, 1906, the form was removed and the pole hauled nine blocks and set. I still had some fear as to its ability to withstand a sudden jerk, so fastened a piece of messenger to the top and put a considerable strain, approximately 2,000 lbs., on the con-

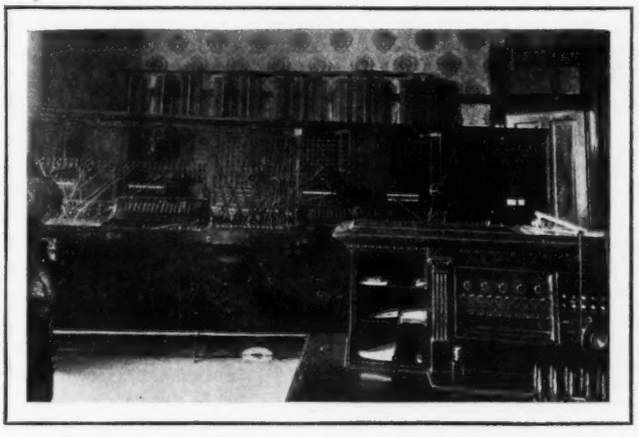


Fig. 3. Front View of Same Board After Remodeling.

crete pole. This deflected the pole about fifteen inches. The messenger was then cut, and the pole lunged back, and the only result was several cracks in a space of six feet above the ground and eight feet from the top. However, this did not impair the strength and usefulness of the pole, as it is still carrying three arms of wire. Since this experiment I have built 43 poles, varying from fourteen to sixty feet, and have not known one of them to fail.

To construct poles thirty-five feet and under in length I believe it is the cheapest to mould the pole on the ground at the point which it is to occupy, and after it has hardened, set with the derrick in the usual way. For poles larger than thirty-five feet I would advise building in a vertical position, so that when the forms are removed the pole is left ready for service. These forms are made of iron, cypress, or some other material that will not warp easily, and so arranged that they will fit together easily, and when all finished, present a continuous, smooth surface on the inside, forming a square section, the pole tapering as desired. The four corners are filled in with triangular pieces so that the form will produce a square pole, with the corners chamfered off. In either position the front or top of the form should be left open, so as to allow for the placing of the rods and spiral binding wire. The proper placing of these is one of the most important factors of the construction of the poles.

In setting the forms upright the hole should be dug first and the forms set directly over it. The hole being the form for that portion of the pole from the ground line down. After the forms are in readiness, four rods of the desired size should be placed, and the binding wire placed encircling them in a continuous spiral from top to bottom. The rods are then tied out against these binding wires, near the four chamfered corners. Care must be taken to place the rods as near the surface as possible, and the binding wire should draw tightly

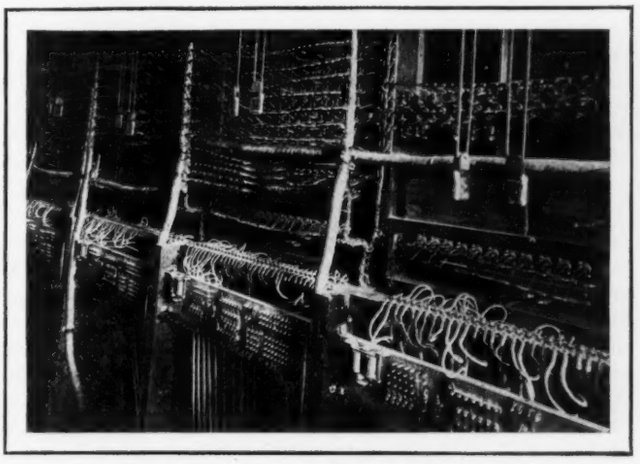
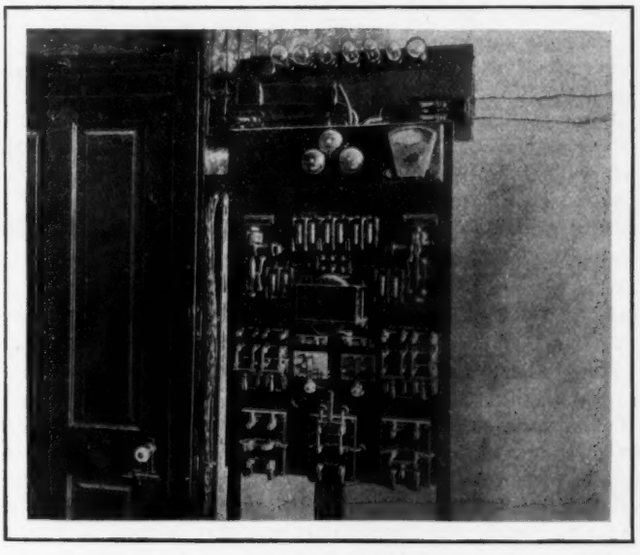


Fig. 4. Rear View of the Reconstructed Board.

against the rods. The binding wires for the forms are a very important factor in the construction, as they not only tend to make a complete steel structure and tie the concrete together, but prevent the rods in strain from buckling outward and shearing off the concrete. This will, of course, destroy the pole and make it useless.

CONCRETE.

The proper mixing and placing of the concrete is one of the most important features. Concrete has two distinct stages through which it passes during its setting. First, its initial set, which appears immediately as the water is added. Chemical action at once begins, and crystalization starts, which is noticeable in about thirty minutes. This gradually increases and continues for about three hours, at which time the crystals have



Fog. 5. Power Board Showing Duplicate Mounting of Pole Changers.

reached their full expansion, and under a microscope present somewhat the appearance of flakes of snow. These little groups set up by the crystalization thoroughly interlock with each other and create a mechanical bond, if permitted to stay in that position for any reasonable time, and then the final set commences and continues indefinitely. The life, the strength,

and the crystalization of the entire body depend entirely upon the amount of water used. It must be sufficient to permit the chemical action being kept up to its fullest extent, and deliver the crystals into the hands of the final set fully expanded. Water! Yes, and plenty of it. Make "soup," so that the aggregates will lock firmly, but not enough water to wash the cement away from the stone and sand.

PACKING AND CONDENSING.

Packing or condensing is also important, as concrete when first mixed with water increases in bulk about one-third, and should be tamped and pressed so as to return to its original density, so that the bond or knitting of the cement will not be checked by air holes.

TEST.

A very thorough test was made on a concrete pole recently in Richmond, Ind., as follows:—A pole 30 ft. long and embedded 5 ft. in the ground, 7 in. top and 12 in. at the ground line thoroughly braced so as to make it perfectly rigid, reinforced with four five-eighths in. twisted steel rods, having an elastic limit of from 50,000 to 80,000 lbs. per square inch and thoroughly bound together with No. 9 binding wire.

840 lbs. horizontal pull at top— 6 in. deflection.
1780 lbs. horizontal pull at top—17 in. deflection.
2800 lbs. horizontal pull at top—30 in. deflection., slight cracking.
3640 lbs. horizontal pull at top—36 in. deflection, crushing at ground line.
7200 lbs. horizontal pull at top—60 in. deflection, crushing badly at ground line.

Poles deflected over 6 ft. before falling, rods did not break, but concrete crumbled and rods bent over.

TEST ON CEDAR POLES THE SAME SIZE.

840 lbs. horizontal pull at top—11 in. deflection.
1780 lbs. horizontal pull at top—33 in. deflection.
Pole broke at 2200 lbs—3½ ft. from ground line.

COST.

Concrete poles will vary in cost according to their location. The same thing is also true of wood or iron. A concrete pole, based on conditions that exist in the middle west, can be built for very nearly the same cost as first-class cedar; that is, a 45-ft. concrete pole can be built, set and ready for use at an expense of about $25, while a cedar pole dressed, set and ready for use will cost about $22.50.

I am thoroughly convinced from my experience that with proper organization and a little expense the cost of the concrete pole will gradually reduce, while that of cedar will rapidly increase. This matter is worthy of careful consideration, as the time is rapidly coming when some other material must take the place of wood.

Indiana National Guard Reports Success of Telephone in Field Maneuvers.

An Indiana correspondent states that a few weeks ago Capt. Wallace Sherwood, commanding the Signal Corps of the state militia, with fifty-four of his men, returned from a ten days' march. During the entire march the equipment for establishing communication between columns of marching soldiery was put to severe test. Practically the same service for communication that is used in actual warfare was gone through with, and Capt. Sherwood was well pleased with the service which the telephone rendered.

Immediately upon leaving the outskirts of Indianapolis the wires for communication between the head and the rear of the column were laid, and messages, both by telegraph and telephone, were sent freely. On the return trip the corps marched in a double column, the two detachments being about two miles apart, and cross wires were run from one column to the other. During this time the one was in almost constant touch with the other by means of the wires.

The establishment of communication between the two columns was accomplished while the corps was marching from Franklin to Greenwood, a distance of ten miles. There are two parallel roads between the two places which served the purpose exceptionally well.

When the corps left Franklin one column started for Greenwood via one road, while the other column took a road leading to the same place, but which was about two miles distant. Both columns moved at the same time, and both left a trail of properly equipped wire for establishing communication behind them. As the line advanced cross wires were run from the road traveled by the one column across the country to the road traversed by the other, and as these "stations" were established the men conversed with each other to test the working of the wries. As soon as the first line was run from one column to the other the wires, which made a circuit at the point of beginning, were taken up.

The wires are placed in the middle of the road by the men who have charge of the unreeling, and in order to keep them free from entanglements in the roadway the wagon from which the wires are unreeled was followed by a man on horseback who, aided by a "pike," placed the wires at the side of the roadway. At railroad crossings in order to get their lines across the tracks the signal men cut a small trench under the rails and placed the wire through it. The wires were also frequently fastened to fence posts and sometimes they had to be carried over telegraph poles.

A Talk on Storage Batteries.

In a discussion of "The Storage Battery in Its Relation to Signaling Systems," at the convention of the International Association of Municipal Electricians, Atlantic City, N. J., Sept. 14-16, 1909, Mr. James Dixon, of the Westinghouse Storage Battery Co., stated that storage batteries possess the following advantages over primary batteries:

1. They require a minimum of attention in use.
2. The cost of maintenance is low.
3. Parts have a long life.
4. The voltage per cell is high.
5. Large energy capacity is compressed into small space.
6. Discharge voltage is uniform.

Cells should be filled with electrolyte made by diluting sulphuric acid with distilled water, to insure purity.

The impurities which produce the most harmful reactions in a storage battery cell are iron, chlorides and nitrogen salts, and these often occur in city water in such quantities as to greatly shorten the life of the plates if such water is used in making the electrolyte.

The work to be done, expressed in ampere hours, determines the smallest size of battery which will suit any particular installation. Other considerations may make the use of a much larger battery advisable.

The number of hours during which current must be provided in case of breakdowns of charging facilities must be given due thought. Furthermore, in operating a battery, the lead in the positive plates is being continuously oxidized and to get electrical energy out of the battery lead is used up, just as truly as coal is used up when it is burned to get out of it the heat energy dormant in it. Therefore, if the smallest battery possible be selected, it may not be actually the cheapest, as a battery of double the capacity will probably cost only 50 per cent more, with an increase in useful life of about 100 per cent.

It may often be readily proved by calculation that a battery of several times the capacity needed to supply the anticipated current demands will be the cheapest in the long run.

Economy of Operation*

By H. E. Davis

In the building of a telephone plant a consideration of the future cost of operation is as essential as of the cost of construction. Some engineers are building their plants with the object in view of reducing the future cost of operation to a minimum amount, but the majority of engineers are not figuring this cost beyond the economical distribution of the cable plant. Therefore, when most new or reconstructed plants are accepted by the company they have a "model" physical plant, which may involve the maximum cost of operation.

In building a new plant, care should be taken in studying the natural growth of the city in which the plant is to be built, the natural traffic load on the exchange and the ultimate growth of both city and traffic. Combine with this the provisions for adequate cable and wire plant and the adequate installation of equipment should give an estimate by which the plant may be built at a minimum cost of construction and future operation.

In reconstruction, the problem of building to suit economical operation is not so difficult, as trouble records, operating records and past experience are available. Past experience has taught many lessons in construction and operation. Very few plants are at present reconstructed without making adequate arrangement for the maximum growth of the city. Care should be taken so that the cable plant is distributed in such a way as to be available for party line systems, as well as to reduce the cost of maintenance. Plenty of cable, with a flexible distribution, will surely lower the cost of operation, and with an adequate plant, an efficient force of troublemen and operators, efficient service can be given for the minimum price. In accomplishing this you have satisfied your stockholders as well as the subscriber. In figuring the future operating cost, it is well to keep in mind that the grade of material and equipment installed either places your operating expenses high or low. Good equipment is a good investment, cheap at the highest price, while poor equipment is a poor investment at the very lowest price.

Few plants are rebuilt which have taken precaution to lower the operating expense as a whole. Many companies unknowingly operate for a life time at the maximum cost of operation. I believe that more money is lost in the operating department than in any other department, and especially in that part of the operating department known as operators' salaries. There are many exchanges, both large and small, whose managers know what their operators are doing, when they should know what they can do, and see that they do it. Very few operating forces are worked anywhere near their limit. Many managers figure their board load something after this fashion: Mr. So and So's plant has so many answering jacks per position, we had so many on the old board, therefore this amount is enough for us now. Careful study of their traffic, and the knowledge of what an operator can do, would have meant a vast saving on the installation of new or extension switchboard, as well as operators' salaries. The amount of work which the average operator can do is figured out very carefully in all of the larger exchanges, and each new operator is expected to do the required amount of work at the end of a given period. The larger companies foresaw many years ago that a large amount of money was being lost each year in operators' salaries; they took steps to eliminate the waste by employing men who understood this class of work, and experience has shown that a large amount of money has been saved yearly by this method. This same method may be applied to the smaller exchanges, especially in exchanges which are large enough to be in the multiple board class, by each manager making a special study of operating conditions. A careful study of peg counts, close observation of operators, and a little judgment will generally show a few deficiencies in the operators' time schedule and arrangement of equipment. The running of an economical schedule means a decrease in the total of operators' salaries.

For example: Here are two cases of high operating costs caused by lack of study of operating conditions. On one plant operating 11 positions of switchboard, increase was needed, so 4 positions of board were ordered, including the multiple. When the boards were placed in commission it was found that by rearrangement of answering jacks the 4 extra positions were not needed, and they are standing idle to this day. On another board, operating 30 positions, it was found that by rearrangement of answering jacks, 20 positions were all that were necessary to operate the plant. These cases show the vast amount of money wasted in buying unnecessary equipment, as well as money wasted on operators' salaries.

Many persons responsible for the operation of a plant figure that 80 to 100 answering jacks per operator is all that can be handled and successfully give good service. This is generally a mistaken idea, especially on any plants under 6,000 subscribers. Anyone accustomed to figuring these board loads, does not figure what the neighboring exchanges are doing. The results are obtained from careful figuring and a knowledge of what operators can do under certain operating conditions. Under normal operating conditions, an operator will answer from 225 to 275 calls per hour. Some place the average as high as 300 calls, but this is done under the most favorable operating conditions. In cities having a population of not more than 50,000, 160 answering jacks can be installed per position and operated successfully, providing the intermediate frame is used scientifically and an efficient force of operators is maintained; although this number depends on the board load, as it would be possible to have too many answering jacks per position during the busy hours. In magneto work, allowance must be made for the extra work the operator has in supervising calls and taking care of her drops, although this condition is now nearly eliminated on the later types of magneto boards. The only way for a company not to increase its dividends is by buying unnecessary equipment and adding partially idle operators.

Many companies which are either considering the building of a new plant or reconstructing the old plant, would save money by obtaining the services of an efficient operating man to study out their needs before they start the work.

Rearrangement of answering jacks may be accomplished in nearly any switchboard by making room for the additional jacks in the positions in which they are to be placed, then double back the cable and jack from the far end of the board. In some instances, special arrangements have to be figured out in order to successfully rearrange them. The cost of rearranging jacks is generally very small in comparison with the amount saved. The question of economical operation of your switchboard should be left to

*Abstract of a paper read at the convention of the Kansas Independent Telephone Association.

the manufacturer to settle for as a general rule he does not know what you want; it is his business to sell you what you specify. I believe that within a few years all manufacturers will make a special study of this problem, as competition and the buyer's insistence for economically operated boards will force them to it.

The cost of clearing trouble may be reduced in many cases by carefully studying the individual abilities of your troublemen. This study, in many instances, will show that it is possible to double the amount of work which they have been doing, providing they are worked systematically. Troublemen should be worked under the absolute control of the wire chief, and if he is capable he will probably devise an economical and systematic way of handling his men. Many men who have charge of a force of employes, gauge the importance of their position by the number of employes they are working, regardless of the cost in proportion to the total amount of work which they do. Few of these men realize that they can make themselves more valuable to their employer by working a less amount of employes, and still retain the same amount and grade of work. As soon as the force is reduced to the minimum number, higher wages can be paid to those remaining, and they in turn do more work and do it more loyally. It will be noticed in many instances that a man's efforts to do a better grade of work, and his loyalty to his employer, rise and fall in proportion to the manner in which he is treated, and the wages which he receives. A good many wire chiefs work their men in such a manner that they do not use the maximum capability of each man. This result is caused by lack of systematic methods and lack of control in dealing with them personally.

For example: Let us take the Topeka exchange with its 6,000 subscribers. In this exchange we believe we have a high standard of economical handling of troublemen. The trouble on this exchange is handled by two troublemen, although, under adverse weather conditions, it is sometimes necessary to carry three to five men in order to clear trouble quickly. As these additional men are transferred from the construction department, every effort is made to relieve them from trouble duty at the earliest possible moment. The total number of cases of trouble for the three months and the time it was necessary to spend in clearing them are as follows:

	Dec.	Jan.	Feb.
Total cases	1935	2389	2066
Total time to clear.....	730 hrs.	637 hrs.	517 hrs.
Average time per case....	23 min.	15 min.	15 min.

The method by which the above result has been obtained is practically the same method followed by larger companies. In addition to this each man is treated considerately, and is carefully taught that his individual record in clearing trouble is that which brings him his increase in wages. This, of course, acts as a stimulant for him to do more and better work, and tends to keep him just ahead of his trouble. The wire chief has absolute control over these men at all times of the day. Each man reports for duty from the company's barn; he calls the wire chief, who gives him his trouble. The trouble is entered in a note book which the troubleman carries for that purpose. The wire chief does all of the routing, and as a man O. K.'s a trouble, he is given the next few cases. If an instrument has to be changed the troubleman receives an O. K. to bring it to the office and change it. Under this system the men very seldom have a chance to talk personally with the wire chief, and it eliminates their loitering around the shop and terminal room. As soon as a case of trouble shows up on a cable pair, a bridge reading is taken, the trouble located and repaired before it rains and causes the entire number of pairs in the cable to be in trouble. If the trouble is not located before all pairs are in trouble it will be nearly impossible to get an accurate reading, as good clear wires are essential to Varley or Murray loop readings. These two methods are the most generally used in locating cable trouble. One can feel fairly sure when a cable pair gets in trouble on a dry, clear day, that it was caused by some outside force, such as a bullet, lineman's spur, etc. Trouble caused by a limb of a tree wearing a hole in the sheath, or crystallization does not generally show up until rainy or damp weather. We have on the Topeka exchange a total of 4,550 cable pairs. Out of this number we have only 29 pairs that are bad and cannot be used. This number will be reduced, as the cableman is used, when he has no other important work, to clear these pairs. The wire chief and cableman clear an average of one bad pair per day. The only pairs which cannot be made available at some outside terminal are those which are in trouble in the underground ducts, between manholes.

A motorcycle may be used advantageously in nearly every exchange, especially if the surrounding territory has good roads. We have used one on the Topeka exchange for the last 18 months, and the average maintenance cost has been $13.00 per month. This includes a new machine. The old one was turned in on the new machine so at the end of the 18 months we had a new machine. The cost of maintenance on a machine is proportioned to the care with which it is used. In assigning a troubleman to motorcycle duty it is policy to place one who has some mechanical knowledge, as well as one who is careful. A motorcycle will average three times as much territory as a horse and wagon. In favorable weather a motorcycle should be used in the country, while the horse and wagon are used in the city; this condition should be reversed during stormy weather. Some companies allow the men to own their own machines, the company adding the rental on the employe's check. In this case the employe pays for his own repairs.

Maintenance on switchboards should be watched very carefully, and all trouble classified. Those cases which show the greatest amount of trouble should be decreased to a minimum amount by correcting that condition which is causing the trouble. There are probably three conditions which cause the most trouble on a switchboard. They can be attributed to rough and careless usage of equipment, poor equipment, and poor work done by the repair men.

The careful supervision of all work, good equipment and an economical employes' schedule will tend to reduce the cost of operation to a minimum amount, while careless supervision of all work, inferior equipment and an extravagant employes' schedule will cause the cost of operation to rise to a maximum amount.

Torpid Thomas Ticklefeather
Wore out yards of good sole leather,
Trudged around all over town,
Climbed up miles of stairs and down.
Thomas now is up to date.
Found his business couldn't wait,
Left the dusty streets alone
And used a nickel telephone.

—*New England Telephone Topics.*

Back.

Mary is back from the seashore,
With a lovely coat of tan,
Johnny is back from the country,
A freckled and fat "little man."
Mother is back from the mountains,
Looking on life as a joke,
And father is back in his office—BROKE.

—Exchange.

Central Office Locations*

By S. D. Levings

Following the completion of the theoretical design of the subscribers' and trunk cable plants, the design for the toll switching trunk and toll cable plants is to be made. This plan involves the determination of a location for the toll switchboard. For the theoretical plans, such as are being considered, it is felt that the following methods will be sufficiently accurate to insure the desired results. In most towns not bounded on one side by water, as in the case of the city of Chicago, formerly cited, toll lines enter the city from four different directions, perhaps the cardinal points of the compass. The problem, then, amounts to the selection of a location that will insure a minimum cable wire length from the toll switchboard to the various toll lines, at the intersection with the town limits, or other points chosen, where the cables join the air wire circuits. This location is obtained practically along the lines used to determine the telephone center, and consists of balancing the lines against the distances from the toll switchboard to the point of joining the aerial wire leads. A skeleton map should be prepared showing the location of the toll leads entering the city, the proposed toll switchboard location, and the toll cable routes. Having determined the theoretical center or switchboard location, the distance from this center to each toll lead should be obtained. These several distances should then be multiplied by the number of toll lines corresponding, and the results compared. The location may then be shifted to such a position as to make these various distances the minimum obtainable in each case. When the toll line center has thus been determined, it is assumed that the toll switchboard will be in the exchange building located in the district within whose boundaries the toll center falls. It is in only the very large cities that toll line business will warrant the erection of a special toll exchange, and for this reason this procedure will not be considered at present. When the toll switchboard is located in a district exchange building, the toll switching trunk wires are assumed to lie parallel to and in the same streets as the shortest trunk cables between the exchange in which the toll switchboard is located and every other office. Fig. 26 shows the trunk routes for a territory represented by the solid lines, and the toll switching trunk

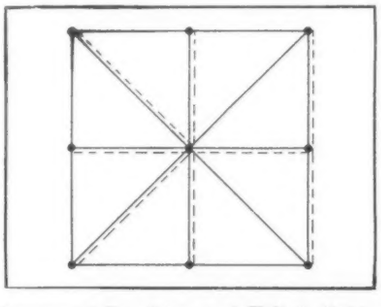


Fig. 26. Diagram of Trunking and Toll Switching Trunking Routes.

routes are indicated by the dotted lines. The difference between the trunk cable plant and the toll switching plant lies in the fact that in the trunk plant every office is connected to every other, while in the case of the toll switching trunk plant every office is connected to one of the offices. There are two reasons for having the toll switching trunks lie in the same paths as the trunk cables, beyond the fact that this procedure usually guarantees minimum distance. First, the toll switching trunk cables are of such small capacity that they would not warrant a separate conduit or pole line. Second, it is possible to encase them in the same sheath with the trunk cable wires. Where a cable

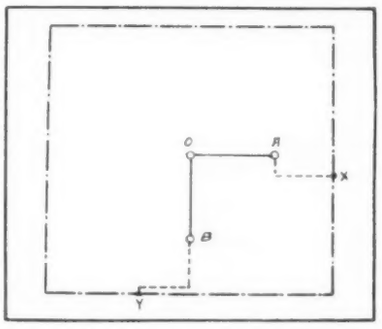


Fig. 27. An Exception to the Rule for Toll Cable Layouts.

is used for two purposes, such as local and trunk transmission, or where two wire sizes are encased in the same sheath, the cable thus constructed, or used, is called a composite cable. By the use of composite cable any advantages gained in distance for the trunk cables by the use of diagonal streets will also be gained for the toll switching trunk wires.

Following the design of the toll switching plant, the toll cable design is to be taken up. The theoretical location for such cables is the shortest route between the exchange containing the toll switchboard and the terminals of the several toll leads. There is a condition, however, that will cause an exception to this rule, and it should always be taken into account. Consider Fig. 27, in which *O* is the exchange containing the toll switchboard, *X* and *Y* the terminals of two toll leads, and *O-A*, *O-B*, trunk routes previously established. It is obvious that, as far as possible, the toll cables should lie in the same routes as taken by the trunk cables or subscribers' cables where available. This is true under usual conditions, as the toll cables are of such a size that they will not admit of the economical construction of either conduit or pole lines for their special use. Therefore, where the greatest concentration can be obtained, the maximum economy will result. The dotted lines in Fig. 27 represent the possible routes from *A* to *X*, and from B to *Y*. When the connecting routes for the toll cables are established, a theoretical design for the various cable plants to be considered in the annual charge comparisons has been completed. The next work to be considered is the determination of the sizes of the various items of distributing plant, based upon the theoretical designs just completed, switchboard and apparatus plant, and to determine the other fixed charges not included under these two headings.

Taking up, in order, the items previously tabulated, which are to be considered in the cost comparisons, the subscribers' mileage will be the first quantity to be obtained. The mileage of individual subscribers is not desired in this work, the total mileage being used in all cases where cable is involved. The total subscribers' mileage, for any district, is the sum of the distances from each subscriber's station to the central office, measured along the cable routes. Theoretically, the obtaining of this figure

*Continued from issue of September 18, 1909.

would mean the measuring of the proper distances from each subscriber to the central office. This is possible, but not practical, and as a substitute method which will give the desired results, the following is used: Let Fig. 28 represent a portion of a district, showing a main cable lead in State street, a branch cable lead in Second street,

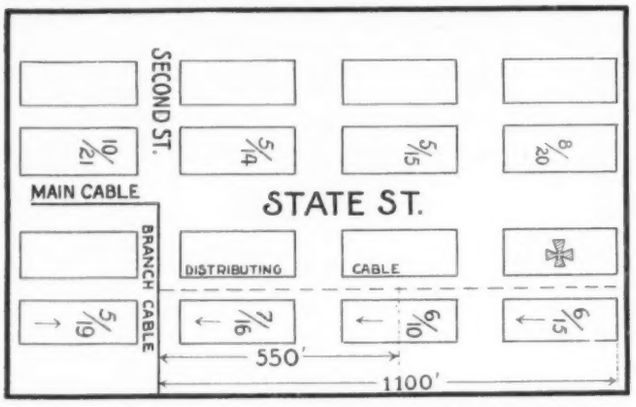


Fig. 28. Method of Obtaining the Total Subscribers' Mileage.

and the fractions in the individual blocks the line figures, of which the numerator is the present, and the denominator the ultimate line figures. As was previously explained, in the theoretical lay-out for subscribers' branch cables, they are planned so that the cables will lie four blocks apart. In a modified case here presented for illustration three various blocks on one side of the branch lead, one beyond the other, are assumed to feed into the branch cable. In Fig. 28 this feed is indicated by the arrows in the blocks. The principle upon which the mileage for the subscribers in these block groups is determined is the principle of mean distance from the branch cable lead to the approximate center of the group. Assuming in the case of Fig. 28 that the distance from the branch lead to the last house in the block designated by a cross is 1,100 feet, the mean distance to the cable lead would be 550 feet. A point 550 feet from the branch cable lead would be approximately the center of the block group, so the total subscribers' mileage for this group would be the sum of the ultimate line figures in the blocks, multiplied by 550 feet to the intersection with the branch cable lead. The next step is to find the distance that this intersection is from the central office. Multiply it by the total number of ultimate lines, and add this result to the first mileage obtained from the center of the block group to the branch cable lead. It is permissible to obtain this figure by one mathematical process, which is done by obtaining the total distance from the center of the block group to the central office, and then multiplying it into the number of lines. In this way each district should be divided into block groups and the total subscribers' mileage obtained.

Next in order, the quantity of "A" position equipment is to be determined. Before taking up the methods used to determine this quantity, a short review of the necessary switchboard equipment and its several functions will be of material benefit in understanding the calculations to follow. First, the "A" board is for the purpose of connecting subscribers' lines which terminate on the "A" board, and consequently lie within the district in which the board is situated. Second, the "A" board is for connecting the subscribers' lines which terminate in it with the "B" board in a distant exchange, when the subscriber whose line terminates on the "A" board is the originator of the call for a party in the distant exchange district. The "A" board is divided into units, which are termed positions. These positions are so designed that one operator may handle the traffic over a position when the ultimate number of jacks are installed. Thus it is understood that a 20 position "A" board will require 20 operators to operate it during the time of heaviest calling or traffic, as the number of calls is termed. In designing the "A" position so that it may be properly handled at the ultimate time by a single operator, the number of calls which an operator can efficiently handle during the time of heaviest traffic is calculated. In determining the number of "A" positions required, the number of operators required is the basis upon which the problem is solved, and as the relations between positions and operators are as one is to one, solving for the number of operators solves at the same time for the number of positions required. There are two factors which enter the problem of determining the number of operators necessary during the time of heaviest traffic: First, the total number of lines to be served by the "A" board, and second, the number of calls originating among the subscribers whose lines are terminated on the "A" board. When these two quantities are determined they may be correlated, and the number of originating calls that an operator can handle in a given time ascertained. This first quantity desired is known from previous investigation, and is the total of ultimate lines in the district under consideration. The number of originating calls may be determined in the following manner.

Looking back to the Development Study for a moment, it is seen that six classes of lines were considered, which are:

Class A—Individual line residence service.
Class B—Two-party line residence service.
Class C—Two-party line residence service.
Class D—Four-party line residence service.
Class R—Individual line business service.
Class S—Two-party line business service.

It is found in actual practice, and it would be logical to assume were actual records not at hand, that the number of originating calls per day for these various classes of service would not be equal. For instance, it may be expected that the business man will use his telephone a greater number of times per day than the housewife, as the business man is more dependent on the telephone.

In the same way it is logical to assume that the person who can afford individual line residence service will have a greater need for a telephone than the person who can

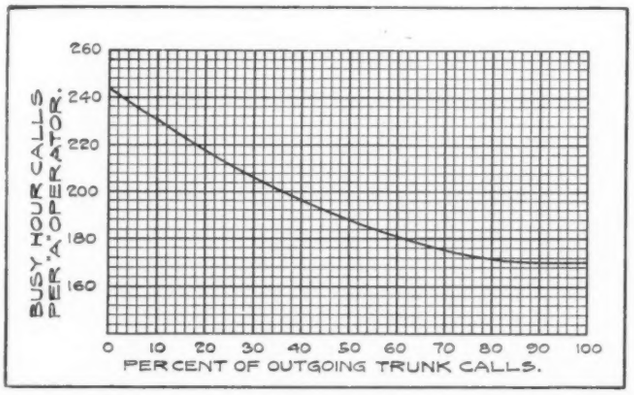


Fig. 29. Relation Between Number of Originating Calls Which an Operator Can Handle With Varying Percentages of Trunked Calls.

afford but a four-party line service, and the greater need would indicate grounds for the assumption that such a telephone would be used the greater number of times per day. Various studies of the calling rates for these classes of service have resulted in the following proportionings, which may be modified if local conditions and comparison

with actual records of closely similar cities indicate that they are likely to be inaccurate.

Class A— 8 calls per day.
Class B— 8 calls per day.
Class C— 6 calls per day.
Class D— 4 calls per day.
Class R—20 calls per day.
Class S—14 calls per day.

From the development study records the ultimate number of the various classes of lines can be obtained, and multiplying the total number of each class by the number of calls per day, as just given, will give the total number of calls per day for each class. The sum of the totals for the several classes will then give the grand total of the number of originating calls in the district per day. To determine the number of operators necessary to handle the originating calls each day, the maximum number that can be handled for a specified period must be known. By a careful analysis of the calling rates during the 24 hours in the day, it has been found that in many cities the greatest number of calls which occur during a specified period of the day usually are made between 9 and 10 a. m. From this result it may be arbitrarily assumed that this hour shall be taken as the basis upon upon which to calculate the number of calls which an operator can handle, known as an operator's load, and the hour of maximum load has been called the "busy hour." All traffic calculations within exchange boundaries, or in the multi-office territory, are calculated on the "busy hour" basis. This problem is exactly similar to those involving plant design. Sufficient plant is afforded in some cases to care for the maximum number of lines, and in the same way provision must be made for handling the maximum number of calls. Having determined upon the busy hour as a basis for traffic calculations, it becomes necessary to determine the number of originating calls that will occur during this hour of the total calls per day. The ratio of the calls during the busy hour to calls per day is approximately 1 to 10. Applying this ratio to the total number of originating calls per day, the number of busy hour calls will be the result. Owing to the functions to be performed by the "A" board, all of these originating calls cannot be considered as confined within the district, so a certain number may be assumed, which will be trunked to other exchanges. The number of calls so trunked is influential in determining the number of calls that can be handled by an operator, as the time for making such connections is considerably longer than for purely "A" board connections. Fig. 29 illustrates diagrammatically the relation between the number of originating calls which can be handled at one position with varying percentages of trunked calls. The method of determining the number of trunked calls will be described presently, and when the percentage has been obtained the number during the busy hour can be determined from the curve in Fig. 29. Having this number, and the total number of originating calls, the number of operators required can be obtained by division. The number of operators will also be the number of "A" positions required.

(To be Concluded.)

Co-operation of Operators Expected to Reduce Proportion of Wrong Number Errors.

The following, from the *Operating Bulletin* of the Chicago Telephone Company, indicates one of the lines along which efforts to improve its service are being directed:

"With all operating conditions on the most favorable basis, it is expected by the company that the service rendered will be ahead of any previously given. The principal point to be observed is accuracy of connection. Our slogan should be 'Get the Correct Number.' Over order wires, give the order as if you meant the 'B' operator to put it up on the right number without any possibility of a misunderstanding. Any 'A' operator can prevent the giving of wrong numbers by careful, conscientious work. 'A' operators share the responsibility with 'B' operators, but it is evidently their duty to get the order to the distant end in such a clear way that it cannot be misunderstood. If they take special interest in this feature and watch results, they will note how easily best results in this connection are obtainable. An 'A' operator should be able to sit at her position and steadily increase the length of time she is able to handle her work without giving her subscribers a wrong number. The co-operation of the 'B' operators is assured in this matter if 'A' operators will pass their calls in a clear, distinct manner. With our facilities and such excellent conditions, wrong numbers, due to operating causes, should be reduced to a very low average."

The Pulse of the Plant

By Hamilton P. Fairman

The rapid commercial and industrial progress of the present day requires an ever-increasing amount of scientific study to establish theories as a basis for mechanical application of newly discovered principles, as well as to further the development of previous discoveries. A telephone engineer works out a formula in much the same manner as does a physician. The problems put to him relate to certain ills to be corrected, or to specific additional results to be accomplished by stimulating the worn and tired body or nervous system of the plant. With certain well established rules at hand, he tells us that by such and such an arrangement this or that can be accomplished. His part in the work is no sinecure.

After the mechanical arrangements are properly made, can he rest assured that the results will be as anticipated? We find that too often they are not, and further study of the problem is required.

We, of the practical school, if we are wise, will as far as we are able render every assistance in the application and operation of any new and seemingly novel device. Along this line much is beyond our comprehension, so to speak. We are continually in a position of being told, and shown.

We of the maintenance department, next to the ground, have also a field of our own; an opportunity beyond the reach of scientific research. We, in other words, form the skirmish line in the battle for economical operation of the system. We have the first view of the approaching enemy, "Trouble," and while we may, if alert and capable, turn the tide of battle, we are also in a position to give the first cry of warning when skilled assistance is required and not at hand.

No one is in a better position than the wire chief and his assistants to know the condition of the plant. To

avail himself of this advantage, however, he must devise ways and means outside of regular routine records and reports. If from day to day the reports show that the number of troubles is on the increase, eventually he will be asked the one all-absorbing question, "Why"? If he is not prepared to answer, if he has not already been advised

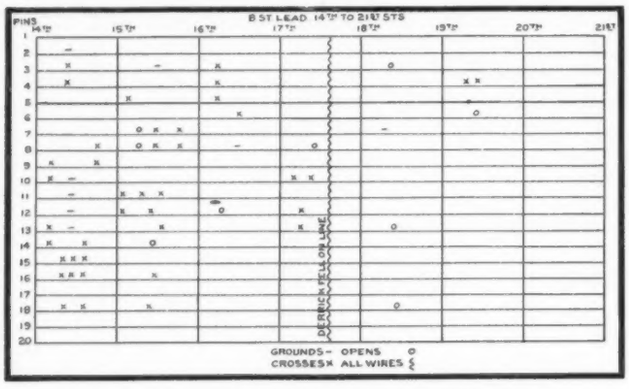


Fig. 1. The Wire Chief's Record for Each Local Lead.

by his scouts that the enemy is through his line of defense, it is high time to act, and act quickly.

On the other hand, if he is thoroughly conversant with conditions, he can say in reply, "Such and such is the case, and this or that is being done to overcome it."

A list of the total troubles, divided between equipment and line, gives but little valuable information other than a general idea of conditions. In ordinary routine these are analyzed under perhaps ten separate headings, subdivided into certain classes of troubles. This does not give the information which the wire chief requires. It is doubtful if it conveys exactly what is wanted to those who study the reports.

What the wire chief wants is the location as well as the nature of the troubles. To devise means of knowing the condition of affairs as he should, let us start at the very beginning.

To take up the study of the maintenance problem of either inside or outside plant, for his own information, let the wire chief first subdivide his plant into convenient sections. This can be easily done, using an ordinary pocket memorandum or loose leaf book. For a beginning something on the order of the following will do:

Inside plant; switchboard (by positions or sections); distributing frame; special equipment and terminals.

Under these headings it is but a few minutes' work to enter the number of cases of trouble each day for a month, thus obtaining a record which can be analyzed at his leisure.

Supposing at the end of the month the record shows a total of two hundred cases. The memorandum book will give further information as follows:

Switchboard.

Section No. 1	27
Section No. 2	81
Section No. 3	20
Distributing frame	65
Special equipment and terminals	7
Total	200

It is evident that the trouble on Section No. 2 and the distributing frame will merit further analysis. One of two methods can be adopted. The tickets for the previous month may be classified, or further subdivisions made for the subsequent month. For illustration, let us analyze the 81 cases of trouble on section No. 2 of the switchboard, which are distributed as follows:

Section No. 2.

Key and cord shelf	69
Multiple (sub.)	6
Multiple, trunk	3
Operators' sets	3
Total	81

Now we have data showing that the trouble predominates in the key shelf. Let us subdivide this further, thus:

Section No. 2—Key and Cord Shelf.

Cords	8
Plugs	8
Keys (ringing)	27
Keys (listening)	26
Keys (call circuit)	1
Lamps (supervisory)	11
Total	81

Now we have something tangible. A visit to the switchboard will no doubt tell the remainder of the story. It may be a remodeled section on which the work was carelessly and hurriedly done. Incompetent repairmen from time to time have made a bad matter worse. The wire chief is in a position to make a recommendation.

Now let us take up the outside plant in the same manner:

Subs. instruments	206
Pri. br. exchanges	149
Aerial wire	11
Cable	4
Cable box	2
Total	372

Two items, subscribers' instruments and P. B. X., warrant consideration. An analysis of the former item may result thus:

Wall set, style X	20
Wall set, style M	11
Desk set, style B	101
Desk set, style F	48
Cabinet set, style D	14
Cabinet set, style E	12
Total	206

Here is some light. Desk set B is notoriously bad. Further analysis may give us more light, thus:

Inst. cord	7
Rec. cord	9
Trans. cord	4
Contact springs	71
Hook spring	10
Total	101

Here we have some valuable information with regard to contact springs, which, if promptly reported, will start investigation along a definite line, which will result in a mechanical improvement of the instrument in question.

Now let us suppose that the number of troubles in aerial wire is running high. An analysis of this entails a little more work, but can be made to show where the trouble lies.

For each lead draw a small diagram as shown in Fig. 1. This diagram will show each wire, its geographical and line location. The symbols shown can be put on the diagrams very easily. With one, two or three months' trouble thus pictured, the cause of the increase in troubles can be located. In one lead we find frequent crosses due to wire and other subjects being thrown into the line, or to slack on account of poles not being properly guyed, either

of which the wire chief is in a positon to remedy. Toll line trouble may be handled in much the same manner, using a diagram similar to Fig. 2.

The double perpendicular lines signify that up to that point all the lines are carried on our pole line. From this diagram it cannot be readily seen that a large percentage of the trouble is located between points 20 and 40, which figures represent miles. Thus in twenty miles of line we have a condition requiring attention.

The above scheme may be varied to suit conditions, but this or some similar plan may be resorted to by wire chiefs to give them definite knowledge of the conditions. If such conditions are beyond their control, they have evidence upon which to make a forceful recommendation. A man is also in a position to show at a moment's notice that he has the entire situation before him.

The above method is outlined with the idea of securing information with the minimum amount of labor. Of course

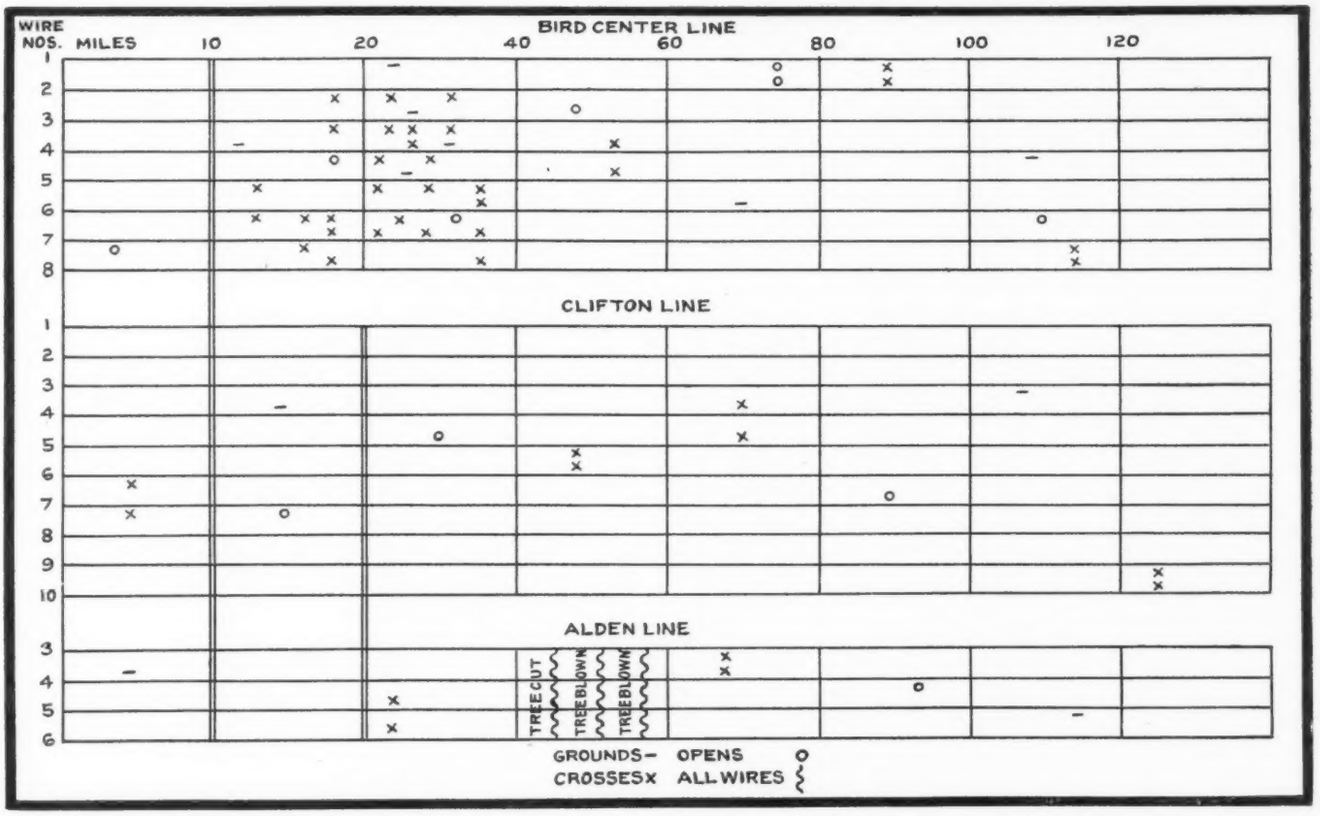


Fig. 2. Scheme for a Wire Chief's Trouble Record on Toll Lines Which Gives Him Definite Knowledge of Conditions.

where the clerical force is sufficiently large to permit, each classification of trouble can be subdivided whether the number of cases is large or not, if it is considered that the end justifies the expense, but the idea which I would emphasize is that a wire chief can, by devoting very little time to the clerical work, keep himself posted from month to month as to which portion of the plant should receive special attention.

The First Branch Exchange.

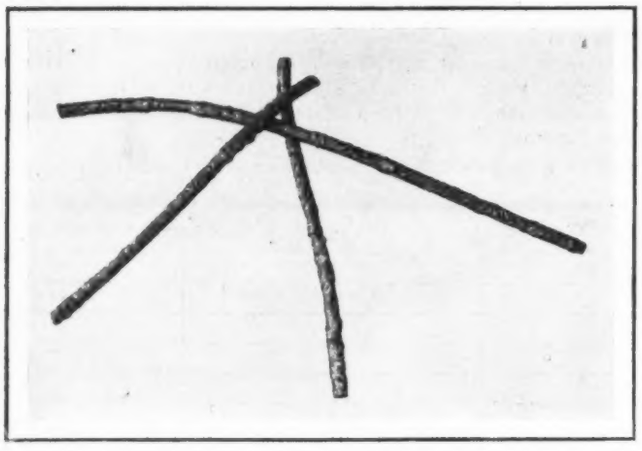
When the construction and installation of a second exchange or branch office is determined upon in any city where growth of the telephone business has made a second exchange necessary, a little caution should be exercised in claiming for it an immediate panacea for the service ills which may have preceded it. That the service does not improve immediately upon the opening of a branch exchange, particularly the first one, is an invariable experience. In fact, the reverse of this is almost always the rule. And when it has been stated to the public and in the newspapers that everything will be lovely when the new branch is put into commission, there is a feeling of deep disappointment and a quick accession of bitter complaints from telephone customers, because the improvement does not follow at once.

A branch exchange must slow up the service until it has been run long enough to smooth off the wrinkles, both inside and outside. If it was not a necessity for other reasons than to improve the service, it would not exist. Let us not deceive ourselves or others on that point. We may issue ever so many circular letters, posters and published rules as to how subscribers shall begin to call by exchange name, as well as number, from and after a certain midnight hour. We may stick a red ink plaster on the directory which is to take effect at that hour showing how calls are to be made then and thereafter, and yet there will be a surprisingly large number of well meaning people who will pay no attention to notices and exhortations and who will continue to call for the same old numbers in the same old way. To such as these the operator must give from thirty to sixty seconds of her exceedingly valuable time, sometimes more, while she asks, "What exchange, please?" several times and finally connects the obtuse caller to "Information." By this time her answering jacks have become a conflagration and she can't catch up, particularly when "there are others." Two or three busy lines of this sort on each position will throw an impediment into the service of several thousand subscribers that no one but the subscriber can help, least of all the operating manager. It is, therefore well to observe caution in claiming too much in advance for such installations. Much may be made of the growth of the city that makes such construction and installations imperative, but we should sing exceedingly low about the benefits that will result therefrom in expediting or immediately improving the service.—*Southwestern Telephone News.*

Letters from Observing Workers

Wires Fused Together by Lightning.

I am enclosing pieces of wire from our toll line between Hamler and Malinta which were welded together during a thunder storm late in August. The line was new, with ground wires every tenth pole. The lightning burned down four spans of this wire as enclosed, taking all the gal-



Wires Fused by Lighting.

vanizing off the wire, and splitting the poles, but never burned the switchboard drops or the 1 ampere fuses that were on the ends of the circuit. The wire in the four spans was burned to pieces no longer than 6 inches.

Napoleon, Ohio. F. P. Diemer,
Manager Home Telephone Company.

Curtain Interferes with Operation of Switchhook.

Not long ago we had a case of trouble on one of our rural telephones which was peculiar, in that knowledge of circuits, previous experience, and questioning the subscriber did not seem to help much in clearing it up. The subscriber's complaint was that sometimes his bell would not ring, but he could hear the signals in the receiver; also that occasionally he could hear conversations going over the line when the receiver was on the hook. The troubleman said, "That's easy; hook-switch springs are bent a little so that they don't always break the receiver circuit," and went out with his pliers to straighten the spring.

Upon opening the telephone he was not a little surprised to find the hook-switch in good order, and in fact everything else about the telephone in first class condition. The bells gave a good strong ring, he could hear and talk with perfect satisfaction, and when the hook was down not a sound was to be heard in the receiver. The closest inspection of all wiring and connections revealed nothing that might have caused trouble, and the troubleman was beginning to doubt whether any such trouble had really existed. The people at the house said that it did not occur often, and on some days not at all. They did not remember of it occuring at any regular periods, or any particular time of the day, did not make any unusual use of their telephone, did not hang anything on it, or lay anything on top of it. They did not know of anything at all that could cause such trouble, but that it had occurred several times they were very sure. Then the troubleman began to think that he was losing his grip on trouble and must give it up or else camp there and wait for it to happen again. He looked the place all over again for something that would give him a clue, but could not find a thing, so decided to call up the office and report.

The telephone was placed just to the right of a window over which hung a lace curtain, and the troubleman, still ransacking his brain for some possible solution, gazed absently out through this as he took down the receiver to listen before ringing. Someone was talking, so the troubleman waited a while and listened for him to finish and hang up. It was a fine summer day, and the troubleman thought of how much more he would enjoy the ride back to town if only he could find that trouble. The gentle zephyrs fanned his cheek and wafted the lace curtain to and fro in front of him. Just then the parties said goodbye, and hung up; just then a breeze a little stronger than the rest came in through the window and as the troubleman hung up to ring central, he saw that the edge of the lace curtain, in its gentle backward swing, had passed the first half of the hook, and was resting in the fork against the back half. The curtain would not swing by, but was pinched between the hook and the receiver when the receiver was on, and would not stretch or slip enough to let the hook go clear down. When there was no wind, or the window was closed, or the curtain didn't get in just on time, there was no trouble.

The troubleman got his breath just in time to answer the operator and report. Then he explained to the folks that since they did not wish the telephone moved from its present location, it would be necessary to keep the edge of that curtain pinned back out of the way. And the ride back to town wasn't so gloomy after all.

Sterling, Kans. Otto Dean.

Another Ghost Story.

Most telephone men have heard of the "talking relay" in the telegraph office. They understand how the armature of the relay acts as a diaphragm, thus producing sound when the same line is used for both telephone and telegraph purposes and becomes unbalanced. These voice currents are exceedingly small compared with the stronger telegraph current, and produce no sound except under favorable conditions.

With these facts firmly in my mind I walked into the Western Union Telegraph Office and was asked to explain how the operator could hear a message coming from his batteries under the table between points in Oklahoma. At first I thought he was joking, but he seemed interested, and said he had heard it a number of times before and had asked his father (who was an agent) about the matter. His father had informed him that while working in Muskogee, Okla., on damp nights while all was still, he had heard messages in Missouri but only when he would place his ear on the table on which the relay was located. I told my friend that it was impossible for any sound to come from his batteries. My explanation to him was that his message, though too faint to operate his relay and cut in the sounder and local batteries, came to his wires inductively from other

TO WIRE CHIEFS AND MAINTENANCE MEN.

Clearing of troubles which occur in your exchange, inside or outside, may be made the subject of short, practical letters which will interest other telephone men These TELEPHONY *will gladly publish, if illustrated by diagrams or photographs. Simply write a description of the nature of the trouble, tests and location, cause found, and method of repair. Payment will be made for all letters published.*

wires which were parallel with his; that it was similar to the "talking relay." If this is not correct I would like to have the correct explanation.

Tolar, Texas. Price Kiker,
Prop. Tolar Telephone Company.

The Telephone Limped, but Never Quit.

After a severe storm I was sent to clear a common battery rural line which showed a ground. At one station I found one ringer coil and the secondary winding of the induction coil badly burned. Having neither a spare ringer nor induction coil with me I connected the good ringer coil across the line and put a small rubber band on the other side of the ringer so that it pulled the armature away from the core running through the good winding. The bell would then operate fairly well as a pulsating ringer. Then I unwound part of the induction coil, and repaired the break. Several days later I was working on a line near there and was told that the same party could not get "Central." I went to the station and found one winding of the receiver burned out. I reconnected the instrument to use its one good coil. With one ringer coil, one magnet coil and a spliced induction coil the telephone worked until we were able to make permanent repairs about two weeks later.

Great Bend, Kan. James Wilbur.

As the Judges See It

By A. H. McMillan

Damage to Pole Line by Contractor.

Will you kindly give an opinion on the following: We have a telephone line built along the margin of the public road. During the spring of 1908, while having the road in question improved, the board of county commissioners complained of some of the poles being too near the road. We went over the line with the foreman of the county roads who was given power by the commissioners to say where the margin of the road should be. We later moved all poles condemned by the man in charge. In the spring of 1909 the road was again improved, work yet going on by contractors under a civil engineer. The present work is being done by money from the sale of bonds, which bonds are in charge of a special bond commission, and separate from the regular county commissioners. Before work was commenced on the road the last time, the engineer told us we would have to move a great many of our poles. We made one trip out to see about them and did not find anyone who could give any information as to what poles were to be moved. The next we heard was when all circuits, three in number, went out on this lead. Our man found three poles torn down by the road men. A few days later they felled a large tree across the wires, breaking them down. Two days later, at a place where the line was 15 feet from the road, they blew four poles out of the ground and over in a field. This time it was done by blowing up stumps with dynamite. Later, one Saturday afternoon, the contractor told us we would have to move some more poles. We told him we would do it as soon as we could. Having to replace some of the poles, we contracted on Monday to have new poles on the ground on Tuesday. We were to go out on Wednesday to put them up and to move the others, but on Tuesday, without a word to us, the road contractor had twelve of our poles sawed down.

The above is only a part of the damage they have done us, but is enough for you to see the way they are doing.

Will you please advise us what steps to take?

You have two remedies, one against future damage, and the other for past injuries. For what has already been done, you have a right to sue the contractor for damages. To prevent his doing any more damage to your line, you are entitled to an injunction restraining him from further interference.

DeBajlighthy Gets a Telephone; He Deserves It!

The Southwestern Telephone and Telegraph Company has been ordered through the mails by Judge C. E. Ashe of the Sixty-first District Court to provide Mr. B. N. C. DeBajlighthy, of Houston, Texas, with telephone service at $1.50 per month, notwithstanding the company claims to have no rate for residences at that price.

Two years ago the company discontinued all party line service and gave notice to subscribers to the effect that charges on single line connection would be $2 a month instead of $1.50, when four had used the same wire. Mr. DeBajlighthy had signed a contract for a party line service at $1.50, and refused to accept any other. He attempted to hold the company to the terms of the original agreement.

Connection was cut and no service was rendered, but Mr. DeBajlighthy kept the instrument. A bill for $2 as rental for one month on the single line basis had been presented to the subscriber and he had refused to pay.

Last spring, under the city ordinances regulating telephone charges, Manager Beck was arrested. He was alleged to have overcharged in rendering the bill at $2, and went to trial in Corporation Court before a jury. No agreement was reached, and the case is still on the docket.

Recently action in injunction and mandamus was brought against the telephone company. Now, in the absence of Judge Ashe, his order has been received by mail. It is temporary, and made in chambers to serve pending the final hearing in October. Under these conditions no immediate appeal lies, but it is announced that the fight will be maintained.

Mental Incompetency Held to Justify Setting Aside Release of Personal Injury Claim.

Elizabeth M. Perkins was injured by falling into a hole which had been dug by the workmen of the Sunset Telephone and Telegraph Company in a street of the City of Ukiah, California. She and her husband brought suit against the company for damages, and for the recision of the release on the ground that she was of unsound mind on the day it was executed. The judgment was in favor of the plaintiffs in both issues. The agreement was thereby declared void and was ordered cancelled upon restoration to the company of the consideration paid. Damages in the sum of $25,000 were awarded Mrs. Perkins and her husband. The case was reviewed by the Supreme Court of California upon an appeal by the company, and the judgment was affirmed, the court holding that the evidence was sufficient to support the finding that Mrs. Perkins was of unsound mind on the day the release was signed, though not entirely without understanding.

Perkins vs. Sunset Tel. & Teleg. Co., 103 Pac., 190.

Agreement Not to Exchange Business Invalid.

In a decision of widespread importance to telephone interests throughout Nebraska, District Judge Corcoran of York has held invalid that section of a contract entered into by various Independent companies by which they agreed not to exchange toll business with the Nebraska Telephone Company. The ruling was made in the suit instituted by the Independent companies of Grand Island, Hastings, Shelton, Kenesaw, York and other cities, all constituting an associated system of Independent lines over a large area of central Nebraska and an injunction was asked to prohibit the Kearney Telephone Company from breaking its contract with other Independents and connecting with the Bell

system. All parties in the agreement bound themselves to exchange business with each other for a period of ten years. Judge Corcoran upholds this section of the contract and allows the injunction as to that feature alone. The clause prohibiting connection with the Bell system is held contrary to public policy. "The invalidity of such a provision," said Judge Corcoran, "is so patent and obvious it does not admit of a moment's serious consideration."

The Independents must exchange with each other according to the terms of their contract, but under Judge Corcoran's ruling they cannot be enjoined from connecting with the Bell. The purpose of the Independent association as set forth in their agreement, was to "build up and extend their toll business in central Nebraska with a view to destroying the monopoly now held by the Nebraska Telephone Company."

Low Wire Over Railroad Causes $5000 Award.

After the jury in the Tazewell county circuit court at Springfield, Ill., was out all night, it awarded Daniel Bohm, a Chicago & Alton railway brakeman, $5,000 damages from the Washington City Rural Telephone company. Bohm alleges that a low wire across the track struck him when he was on top of a freight car throwing him to the ground and causing permanent injuries to his spine. $10,000 was asked.

Some Problems Solved

Subscribers may submit for answer in this department any questions on practical telephone topics, such as construction, circuits, electrical theory, troubles, operating, traffic, costs, records, business methods, etc.

The answer to each question will be furnished by a man recognized as expert in that particular branch of telephony.

In case the answer cannot be published it will be forwarded by mail. No charge is made for this service, and subscribers are encouraged to consult us freely and frequently.

In every case a thoroughly complete description of local conditions is required to insure a satisfactory answer.

Telephone Line on Same Poles With High Tension.

I send you a diagram, Fig. 1, of a high tension line with a metallic telephone line on the same poles. The "High Tension" is developing about all the power that is expected of it, but the telephone line is continually in trouble, the current coming over this line so strong that it keeps the telephone bells ringing constantly, and talking over it is impossible.

Weather seems to change the conditions of the line. During

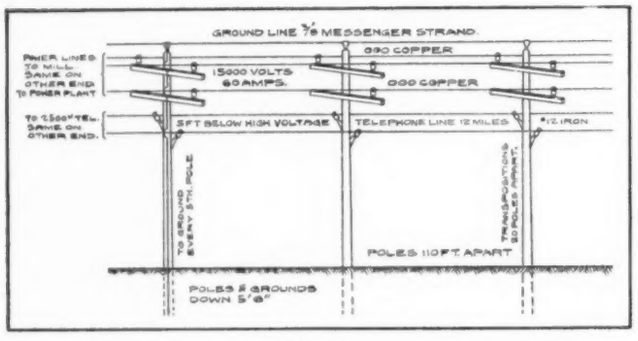

GROUND LINE
⅜ MESSENGER STRAND
POWER LINES TO MILL SAME ON OTHER END TO POWER PLANT
030 COPPER
15000 VOLTS 60 AMPS.
000 COPPER
TO 2500 TEL. SAME ON OTHER END
5 FT BELOW HIGH VOLTAGE
TELEPHONE LINE 12 MILES
½ IRON
TO GROUND EVERY 5TH POLE
TRANSPOSITIONS 20 POLES APART
POLES 110 FT APART
POLES & GROUNDS DOWN 5'6"

Fig. 1.

very wet spells we are able to talk, but not satisfactorily, and the current seems to be taken off considerably. The neutral of the generator at the power plant is grounded.

What would you suggest to remedy this trouble?

In the first place, your transpositions are too far apart. Cut them in at least every five poles—every three poles would be better. Your insulators must be of the best quality, none missing, and all splices in the iron wire strictly O. K.

Ringing Difficulties.

We have a grounded system. A Warner pole changer has been in use probably three months. I have noticed lately that the calling subscriber can hear central signaling the called subscriber very distinctly when using the Warner generator, but when using the hand generator there is no noise to be heard. We use no buzzer on either generator circuit. Would the installing of a buzzer remedy this fault?

We have several lines with two series telephones bridged on a line and on one of these we fail to signal the office bell with the Warner generator, but it rings fine when using the hand generator.

The calling subscriber doubtless hears the ringing by induction, because for at least a short distance all the lines run parallel. The Warner pole changer gives a very peaked wave, which is bad for making noise, while a hand generator is more smooth. The inductance of a buzzer would tend to reduce the trouble.

Regarding the failure of one of two bells to ring, it may be that you have not enough dry cells in the ringing battery of the Warner. Evidently the hand generator is stronger and adding cells to the Warner will bring it up.

D. C. Motor to Use on A. C. Mains.

I have a 110 volt, shunt, 1-16 h. p., direct-current motor, speed 1,800 r. p. m. Our current here is 110 volts alternating current, 60 cycles. Is there any way for me to use this motor on this A. C. system? The output of the motor is only .85 amp. If I cannot put it in use on the A. C., what use could a small motor like this do in a small exchange? I do not care to toss it in the junk pile. Is there any way to get more current out of it? I have a 1-20 h. p., A. C. motor, 1750 r. p. m. We do not use storage batteries.

You can not run a D. C. motor with alternating current. Perhaps you can find an opportunity to exchange the motor for other apparatus you need, or sell it through a supply dealer in another town where a direct current system is operating.

You are somewhat confused when you say the output of the motor is .85 amp. A dynamo may have a current output. Its work is to transform mechanical power into electrical power. But the rating of .85 amp. on your motor name plate indicates simply that at normal voltage the machine will consume .85 amp., and run at 1,800 revolutions per minute.

Rearrangement of Grounded Telephones.

We have found out to our sorrow that we cannot run two parallel grounded lines for any distance without troubles galore. A line now in use has a total length 21 miles. We have 21 instruments along this territory. As we do not want to put any more on this line, we have decided to run another line for about six miles parallel to the old line on the same poles. I enclose a rough sketch, and would like to have your advice on it.

Your method of rearranging your lines looks good. Of course you will have cross-talk between the two lines, but it will not be unbearably bad. If your subscribers have not been used to parallel grounded lines, they will doubtless object at first, but may get used to it, and stand it until you can make it a business proposition to put in metallic circuits.

Matters of Interest to the Field

INTERNATIONAL CONVENTION, AUDITORIUM HOTEL, CHICAGO, DEC. 7, 8, 9.

Texas, Dallas, Oct. 28; Illinois, Decatur, Oct. 27-28; Western Pennsylvania, Brookville, Oct. 13-14.

Injunction Interrupts Merger at Des Moines.

Several stockholders of the Mutual Telephone Company, at Des Moines, Iowa, procured a temporary injunction restraining a lease of the property by the Iowa Telephone Company (Bell), which it was planned to consummate at a meeting this week. Announcement of this suit by minority stockholders has created a state-wide sensation and will, it is expected, result in the dissolution of all the Bell company's plans for furthering a monopoly of the telephone business in Iowa and neighboring states. While this action has been contemplated for some time, the first public announcement came with the granting of the injunction. A hearing will take place Oct. 15 at Des Moines.

The defendents in the suit are The Iowa Telephone Company, The Mutual Telephone Company, The American Telephone & Telegraph Company, of New York, C. E. Yost, George E. McFarland, C. E. Brenton, L. M. Grimes, N. T. Guernsey, O. C. Herman, J. W. Hill, J. C. Hume, M. McFarlin and E. M. Morsman.

The complainants represent the leading Independent telephone interests of the state and are as follows: F. J. Day, Howard S. Baker, P. C. Holdoegel, W. J. Thill, J. B. Ware, J. D. Wallingford and Charles C. Deering.

The complaint alleges that the project to lease the Mutual Telephone Company, following a purchase of a majority of its stock from Brenton Brothers, bankers, of Dallas Center, is part of a plan to monopolize the telephone business and drive out competition in a manner which would give the Bell company the power to raise rates and diminish the value of its service. The plaintiffs attack the transfer of the control to the Iowa Telephone Company on the ground that when C. E. and C. R. Brenton secured control of the majority of stock of the Mutual Telephone Company they selected a set of directors that were mere agents and servants for them. When this was accomplished the petitioners charge that the capital stock of the Mutual company was increased from $90,000 to $1,600,000 and that one million dollars worth of common stock was turned over to these directors without any consideration whatever, which, they say, was unlawful.

Plaintiffs state that it was this stock, which was issued without a single dollar being paid for it and in an unlawful manner, that was sold to the Iowa Telephone Company.

In reviewing the telephone history of Des Moines the plaintiffs declare that when the Mutual company came into the field in 1896 the Iowa Telephone Company had a monopoly of the business. "It was operating an exchange in this city, having only 700 subscribers, to whom it was giving a poor, inefficient service and charged therefore an exorbitant and unreasonable rate; the minute the Mutual company came into the field it made competition. Service was improved and rates were greatly reduced, which was to the benefit of the public," the petition avers.

The Independent telephone men have the best legal advice to the effect that mergers and combinations between competing companies, resulting, or tending to result in the elimnation of competition, are in violation of the common law, and, in some states, of the statutes. They are likewise, contrary to the government anti-trust law known as the Sherman Act. The present policy of the Bell companies to eliminate competition and establish a Bell monopoly, is, therefore, illegal, being detrimental to the best interests of the public and contrary to public policy.

The attorney for the Iowa Telephone Company has issued the newspapers a statement which apparently is intended to confine the case to its aspect as a strictly legal issue, and arouse public sentiment in favor of its own attitude. This statement, however, does not deny that the purpose of the purchase and contemplated lease is monopolistic, nor that increased rates and service of lower quality follow the purchase of competing plants to such an extent as to arouse public indignation.

President Taft forcibly expressed himself on the subject of combinations which eliminate competition at Des Moines only a few days ago, and there is no question that the public recognizes that the stand of the Independent companies is well grounded, not only for the protection of the interests of their associates, but of the public.

Men who are behind this suit have been instrumental in developing not only the Independent telephone systems under their control, but were instrumental in establishing what was until recently an extremely effective organization of Independent operators. Their determination to push the matter to a conclusion brings them the hearty commendation of Independent telephone men throughout the country, and points the way to renewed confidence in the integrity of the Independent operators of Iowa.

The Federal Company, of New York

The Federal Telephone & Telegraph Company was organized in December, 1908, for the purpose of combining into one large operating company a considerable number of Independent telephone companies in Western New York, and at the present time the organization consists of the following properties, formerly owned by the Frontier Telephone Company, in Buffalo, N. Y., and the Inter-Ocean Telephone & Telegraph Company long distance lines, and telephone exchanges controlled by the Consolidated Telephone Company in the following named towns:

Akron, N. Y.	Coshocton, N. Y.	Orchard Park, N. Y.
Alden, N. Y.	Corfu, N. Y.	Pittsford, N. Y.
Athens, Pa.	East Aurora, N. Y.	Rush, N. Y.
Attica, N. Y.	East Rochester, N. Y.	Sayre, Pa.
Bath, N. Y.	Elma, N. Y.	Shinglehouse, Pa.
Blasdell, N. Y.	Fairport, N. Y.	South Dayton, N. Y.
Boliva, N. Y.	Franklinville, N. Y.	Springville, N. Y.
Buffalo, N. Y.	Friendship, N. Y.	Trumbulls Corners, N. Y.
Canisteo, N. Y.	Gowanda, N. Y.	Watkins, N. Y.
Charlotte, N. Y.	Hamburg, N. Y.	Waverly, N. Y.
Cherry Creek, N. Y.	Holley, N. Y.	Williamsville, N. Y.
Clifton Springs, N. Y.	Ithaca, N. Y.	
	LeRoy, N. Y.	
	Mechlinburg, N. Y.	

Negotiations are now pending for the absorption by the Federal organization of other telephone properties in Western New York, including telephone exchanges controlled by the Consolidated Telephone Company in the following named towns:

Angola, N. Y.	Geneva, N. Y.	Mt. Morris, N. Y.
Avon, N. Y.	Honeoye Falls, N. Y.	No. Collins, N. Y.
Caledonia, N. Y.	Hornell, N. Y.	Penn Yan, N. Y.
Corning, N. Y.	Lima, N. Y.	Rushford, N. Y.
Dansville, N. Y.	Little Valley, N. Y.	Salamanca, N. Y.
Farnham, N. Y.	Livonia, N. Y.	Silver Creek, N. Y.
Forestville, N. Y.	Moscow, N. Y.	Wayland, N. Y.
Geneseo, N. Y.		Wellsville, N. Y.

The management sees that many economies can be practiced in such a consolidation of interests and a more substantial organization can be built up in this way than by

operating these numerous companies as separate organizations.

The Federal company has assumed the obligations of the various companies which it has taken over, that is, the bonds and accounts payable, and has issued a share of its stock for a share of the outstanding stock of the companies which it has absorbed.

The relationship of the Consolidated Telephone Company to the Federal company is the same as it was to the various operating companies before the Federal company was organized, that is, the Consolidated company was a controlling stockholder in each of the companies which have now been taken over into the Federal company, and it now owns a share of the Federal stock for each share of stock it owned of those other companies, which insures the Consolidated company a substantial control of the stock of the Federal company.

Following is a copy of the financial statement of the Federal Telephone and Telegraph Company, of Buffalo, N. Y., June 30, 1909, as made by Ernst & Ernst, public accountants:

Assets.		
Properties, Plants and Franchises—		
Cost of properties	$9,950,800.00	
New Construction	101,330.68	
Furniture and fixtures	7,506.85	
Tools	1,546.57	
		$10,061,184.10
Current Assets—		
Cash	$ 13,084.56	
Bills Receivable	9,485.01	
Accounts Receivable—		
Rental accounts	$47,955.46	
Toll accounts	17,333.04	
Toll agencies, toll traffic	31,307.12	
Toll agencies, advances	25,474.95	
Still Alarm Co.	6,453.25	
Directory Publishing Co.	4,043.75	
Consolidated Telephone Co.	1,787.59	
Miscellaneous accounts	13,176.98	
	$ 147,532.14	
Investments—		
Capital stock of other companies	4,885.00	
Inventories (Book Values)—		
Stores and wareh'se supplies	$57,772.42	
Repair shop	1,570.93	59,343.35
Total current assets		$ 234,330.06
Deferred Charges—		
Unexpired insurance premiums		2,703.84
		$10,298,218.00
Liabilities.		
Bonded Debt—		
Federal Telephone & Telegraph Co.	$ 219,500.00	
Underlying Bonds—		
Frontier Telephone Co.	2,500,000.00	
Inter-Ocean Telephone & Telegraph Co.	1,887,000.00	
Ithaca Telephone Co.	95,000.00	
Watkins Telephone Co.	25,000.00	
Valley Telephone Co.	100,000.00	
Clifton Springs Telephone Co.	2,300.00	
Current Liabilities—		
		$ 4,828,800.00
Current Liabilities.		
Bills payable		None
Accounts Payable—		
For material, supplies, expenses, etc.	$ 28,569.42	
Salaries and wages	17,838.86	
Due to agents, tolls	11,522.96	
Due to agents, miscellaneous	1,156.22	
Prepaid rental accounts	2,830.70	
B. G. Hubbell	6,250.00	
Frontier Telephone Co. accounts assumed	1,089.54	
Indebtedness of other companies, acquired	17,447.84	
		86,705.54
Advanced payments on service		28,806.97
Accrued taxes		6,357.33
Nominal Liabilities.		
Capital Stock—		
Issued	$4,797,050.00	
To be issued	298,800.00	
		5,095,850.00
Undivided Profits—		
Surplus at June 30, 1909		251,698.16
		$10,298,218.00

The following is a copy of a combined statement of income and expenses of the Federal Telephone & Telegraph Company, Buffalo, N. Y., for six months ending June 30th, 1909. Made by Ernst & Ernst, Public Accountants:

Income—	
Exchange rental and tolls	$374,701.94
Expenses—	
Service, maintenance, general and taxes	178,982.72
Net earnings from operation	$195,719.22
Fixed Charges—	
Bond interest	116,714.31
Net profits for period	$ 79,004.91
Per cent of operating expenses (including taxes) to gross income	47.77%

New Independent Long-Distance Company to Compete with Pioneer Company in Oklahoma.

It is very likely that the Pioneer Telephone and Telegraph Company (Bell) in Oklahoma will soon have competition by a strong Independent concern. That is, if Major A. M. Harvey of Topeka, Kan., representing the Independent lines of the Home Telephone Company in Kansas, is able to complete negotiations now under way. It is understood that Major Harvey and the Kansas company are backed in their efforts to compete with the Pioneer company in the Southwest and especially within Oklahoma by the Kinloch Long Distance Telephone Company of Missouri.

The officers of the Kinloch company have been watching the actions of the Pioneer company in Oklahoma very closely of late and has sent representatives recently to investigate the Oklahoma telephone field, especially in the western and northwestern part of the state where the Pioneer company has considerable competition by small Independent companies.

According to reports from well-informed people in Oklahoma, the first step of Major Harvey and his associates to enter this state will be made at Topeka some time during the next two months, when it is expected that rural lines in the vicinity of Watonga, Blaine county, Okla., will be purchased for the sum between $80,000 and $90,000. These lines include several short farmer lines running between Watonga, Hennessey, Fairview and neighboring towns. It is proposed to build the line from Watonga to Oklahoma City via Enid, Bliss, Mulhall and Guthrie. It is stated that El Reno will also be on the system. Later the company expects to get a line through to Muskogee and eventually a system running east and west throughout the state.

Montana Interests Purchase Spokane Plant.

A syndicate recently organized by Thaddeus S. Lane, managing director of the Montana Independent Telephone Company of Butte, Montana, has purchased a controlling interest in the Home Telephone Co. of Spokane, Washington.

Among those associated in the deal are Patrick Wall, William H. Hall and John MacGinnis of Butte, A. B. Cook of Helena, T. I. Greenough of Missoula, W. S. Chandler, San Francisco; M. A. Phelps, Spokane; Herbert Lockhart, Marshfield, Oregon, and William Mead, Los Angeles, Cal.

Messrs. Lane, Wall and Hall are directors of the Montana Independent Telephone Co., with headquarters at Butte, Mont., and have large financial interests in that company; Messrs. Cook and MacGinnis are extensively interested in Independent telephone companies in Helena, Southern Idaho, and elsewhere.

M. A. Phelps is president of the Inter-State Long Distance Co., which operates an extensive system of long distance lines and telephone exchanges throughout the Coeur D'Alene district of Idaho, and has its headquarters at Spokane.

T. I. Greenough is a director and has large financial in-

terests in the Inter-State company. Messrs. Mead, Chandler and Lockhart are largely interested in Independent telephone properties at Portland, Tacoma, Los Angeles, San Diego and elsewhere.

At a meeting of stockholders of the Home Telephone Co. held in Spokane, September 29, 1909, Thaddeus S. Lane was elected president, and will immediately assume the direction of the affairs of the Home Telephone Company.

The Home Telephone Company of Spokane was organized in 1906, and has already expended approximately $500,000 in the construction of a modern telephone exchange in the city of Spokane, to compete with the Pacific (Bell) telephone company.

The property at present includes a fireproof central office building located on Howard street. This building is complete in every detail and ready for use, and is said to be one of the finest and best designed telephone buildings in the country.

The Home Telephone Company has a complete underground system consisting of 200,000 duct feet of underground conduits ready for use. The company also has installed all of the necessary poles and appliances for its system.

Mr. Lane stated that six months will be required to complete the Spokane plant ready for operation. This will require an additional expenditure of $400,000, which will be furnished by the new owners, and which is immediately available.

The Recent Electro-magnetic Storm.

On Saturday, September 25th, an electro-magnetic storm of unusual severity swept over the eastern and middle sections of the United States, extending according to reports as far south as Virginia and Eastern Tennessee, and west as far as Omaha and Kansas City. This storm practically paralyzed every telegraph wire in this section and also laid the Atlantic cables helpless. The Morse circuits of the long-distance telephone companies, which are grounded, were also out of commission. The wire chiefs of the American Telephone & Telegraph Company stationed at Morrell Park, near Chicago, about 6 o'clock in the morning noticed unusual electrical conditions on their lines. They called up St. Louis, Cleveland and other points and asked the wire chiefs there if they had noticed anything, but were advised that no trouble had been experienced. Shortly after, however, sixty of the A. T. & T. Co.'s telephone circuits and all its Morse circuits out of Chicago were rendered useless on account of the electrical disturbances. On the lines between Chicago and Minneapolis, the voltmeters were unable to record the voltage, the scales only registering up to 200 volts, as the normal voltage on the lines is only 24 to 48 volts. On this occasion, however, it is estimated that the voltage ran up as high as 450 to 500 volts.

At Tomah, Wisconsin, the telegraph repeater was burned out. It was found that there was a current of 5 amperes on the line at that time. Lightning arresters were grounded on all the lines and numerous fuses were blown. In New York City it is said ahat 23 composite sets and one duplex set were burned out. Two of the underground telephone cables were burned out, one of them being a four hundred pair cable.

The electrical disturbances seemed to come in surges lasting from an hour to two or three hours and then clearing up would return again in a short time. The current on the wires varied from positive at some times to negative at others.

The disturbances continued all day Saturday, and were even noticeable as late as Monday morning in that the lines were noisy.

Disturbances similar to this have occurred at various times, but this is the severest one which has been observed during the past thirty years.

At the time at which these disturbances have taken place, a display of the Aurora Borealis or northern lights has been noticed, and for that reason the scientists believe the Aurora to be responsible. The Aurora is known to be closely associated with the electromagnetic system of the earth, both as to its origin and its visibility, but its effects are not as yet fully understood.

Whatever the reason for the disturbance, it is quite evident that there was some kind of a movement of electrical energy through the atmosphere to the earth, and as electricity prefers a path of low resistance, the grounded wires of both telephone and telegraph were taken and hence the trouble.

The disturbances were in evidence throughout Europe, and especially in Germany, causing as much trouble as they did in the United States.

Northfield, Minnesota, Votes for Independent System.

A few days ago the people of Northfield, Minnesota, got together and held a special election. This election was not for mayor, nor state representative, nor a representative at Washington. It was simply the choice of the telephone company to supply them with service. The vote was 308 to 175 in favor of granting a franchise to the Northfield Telephone Company (Independent) to supply service in the city. It already has a large number of farmers in the surrounding territory on its lines, who are receiving satisfactory service. A lively campaign of opposition against D. D. Turner, manager of the Northfield company and his associates by the competing Northwestern Exchange Company (Bell) preceded the election. Each side put forth its best arguments, and it is to be presumed that the people voted in favor of the telephone company which had the best cause.

Contract Awarded for $50,000 Independent Telephone Building At Dallas, Texas.

On Sept. 15 announcement was made of the award of a contract for constructing a four-story building to serve as the headquarters and central office of the Independent Telephone Company, at Dallas, Texas. Manager J. C. Casler also announced at the same time that arrangements for providing the central office equipment had been completed.

Nine District Meetings Planned for Ohio.

President Frank L. Beam of the Ohio Independent Telephone Association is preparing for the regular fall district meetings which will be held in the nine sub-divisons of the state of Ohio. At a meeting of the executive committee of the association the details for the meetings will be discussed.

Forty-Ninth Consecutive Quarterly Dividend.

At the directors' meeting of the Citizens' Telephone Company, Grand Rapids, Mich., on last Saturday evening, 10,110 telephones were reported in the Grand Rapids exchange. The other 73 exchanges showed correspondingly well. The regular quarterly 2% dividend was declared, payable October 20, being the forty-ninth consecutive quarterly cash dividend paid.

The Kellogg-Dean Situation.

Since the announcement in last week's issue of Telephony of the merger of the Kellogg and Dean companies, progress has been made upon plans for the new organization. However, as a matter of convenience, for some time to come the two factories and organizations will be operated independently, as they have been heretofore.

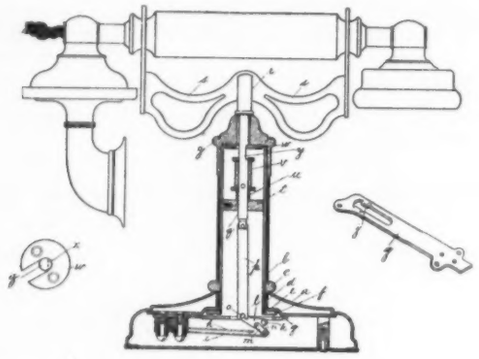
Work of the Patent Office

By Max W. Zabel

MICROPHONE DESK STAND.

A. H. Weiss, Chicago, Ill., patent 934,865, Sept. 21, 1909, assigned to Kellogg Switchboard & Supply Co., Chicago, Ill.

This stand has the ordinary base with switch springs *h* and *i* together with an actuating lever *m*. A further lever *l* co-operates with the rod *p* so that a greater force is exerted by



the lever *m* than by the rod *p*. The microphone rests on the arms *s s* which form the upper ends of the switchhook bar *y*. A washer *w* of special construction prevents turning of the plunger *y* and a spring *u* keeps the plunger in its uppermost position.

TESTING DEVICE.

T. E. Anderson, Superior, Wis., patent 934,874, Sept. 21, 1909, assigned ¼ each to C. R. Fridley, F. Speechly, and S. L. Perrin of Superior.

This test device consists of a resistance wire laid in a crisscross manner on a test panel and a stylus movable along the wire to make resistance measurements, a telephone receiver and battery complete the apparatus necessary. The wire has numerals arranged alongside numbered consecutively from both extremities toward the center.

MOUTHPIECE GUARD.

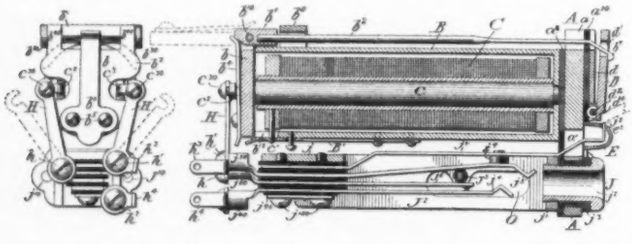
L. H. Webster, Belvidere, N. Y., pat. 935,618, Sept. 28, 1909.

This is a wire guard to be attached to the mouthpiece so that the user can not get too close to the mouthpiece, both to facilitate proper speech transmission and for antiseptic reasons.

COMBINED DROP AND JACK.

Ray H. Mamson, Elyria, Ohio, patent 934,977, Sept. 21, 1909, assigned to Dean Electric Co., Elyria, Ohio.

A combined drop annunciator and jack is shown in this patent. It consists of the front plate *A*, which holds both the



drop parts and the jack. The drop consists of the shell *B* and core *C* which are permanently fastened to the plate *A*. The shutter *D* is of the usual form and a spring j^7 of the spring jack is arranged to restore the shutter upon the insertion of the plug. The coil *C* is removable and is held in place by a spring latch consisting of the pin c^1 and the spring b^{12}.

The armature is jointed and consists of the shutter arm b^2 and the armature proper *b*, a spring b^4 co-operating with a cam portion b^1 so that the armature is normally as shown but can be bent out of the way when the coil is to be removed. Spring clips *H* complete the connection between the jack and coil.

TELEPHONE TRUNK APPARATUS.

A. T. Milnor, London England, patent 935,285, Sept, 28, 1909.

The device herein disclosed consists of means whereby any of a plurality of co-users of a line may present the exclusive use of that line. A constantly moving connector passes consecutively contacts for each one of the probable users and when a user desires the line he sets a stop which automatically ensures him the exclusive use of that line as soon as the carrier reaches his contact points.

CABLE HANGER.

W. J. Hiss, Jr., New York, N. Y., patent 934,808, Sept. 21, 1909, assigned to Diamond Expansion Bolt Co., New York.

This cable hanger consists of the metal clip 17, having

an eye-portion 4 in which the marline or other cord may be secured and tied as shown. A loop 7 on the other leg of the hanger is arranged to receive the other end of the cord after it has been wrapped around the cable.

SELECTIVE SIGNALING SYSTEM.

R. Hamilton, Boston, Mass., patent 935,105, Sept. 28, 1909.

This selective system contemplates a plurality of stations on the same line, having a selecting device at each station by means of which the operator selects the station with which he desires to communicate. As usual, having by this device made the selection and set in operation the switch operating motor of that station, the motor automatically operates the motor circuit in which it is itself located until its action is arrested by a stop that is positioned by, and according to, adjustment of the selecting device. The stop is arranged at each station normally in an inoperative position so that the motor of that station is normally free to be operated independently of the stop.

ANTISEPTIC MOUTHPIECE.

F. Schilling, Nuremberg, Germany, patent 935,274, Sept. 28, 1909.

This device is a mouthpiece which has a bayonet slot to attach same to the transmitter and the other end thereof having a diaphragm.

LOCKOUT TELEPHONE.

William W. Will, Sumter, Minn., patent 935,029, September 28, 1909.

This lockout telephone system consists of a selecting circuit connecting all of the stations and including a selector at each station which comprises a rotatable member and properly spaced keys arranged to be set at will for controlling extent of the rotation thereof. There are also means for sending impulses over the selecting circuit comprising a rotatable contact closer controlled by the rotatable member of the selecting device and a co-operating stationary contact. Differentially acting devices for closing the transmission line are located at the different stations, each comprising a fixed contact and a rotating contact which later is magnetically actuated by the impulses sent over the selecting circuit.

With the Manufacturer

A New Storage Cell for Signaling Batteries.

In his paper presented at the convention of municipal electricians, Mr. James Dixon described an interesting type of storage battery cell, recently developed especially for signaling service by the Westinghouse Storage Battery Co., Boonton, N. J., in collaboration with Mr. A. C. Farrand, chief electrician of Atlantic City.

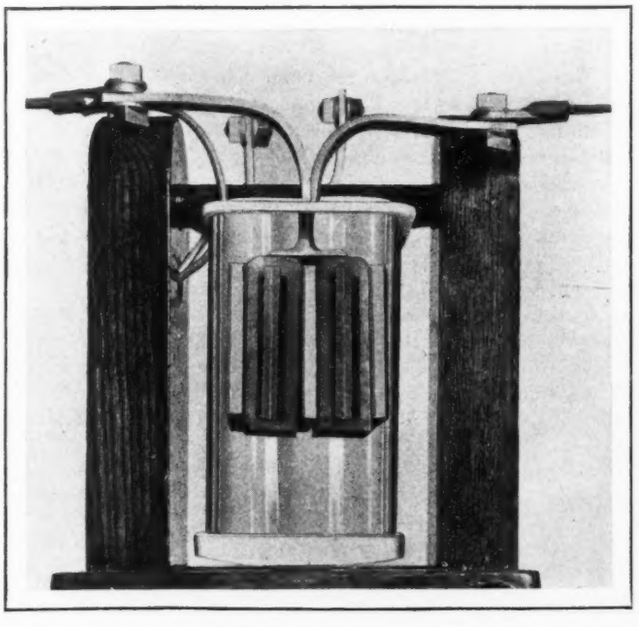
This is a multiple type cell containing three negatives and two positives. The plates are both of the Planté type, and the battery is made with either "Bijur" alloy frame plates or Westinghouse "integral" pure lead plates, in two different sizes.

The positive may be considered as made up of vertical ribbons of pure lead, with horizontal cross members in the form of a grill. The surface so secured is very large and the oxide is in thin layers, grown from the ribbons by the usual Planté forming process, and supported in small holes or cells.

Each ribbon is given room to extend both lengthwise and crosswise, to eliminate buckling and growing.

In assembling the cell, the positive is hung upon the negative by ring rubber separators and the negative alone touches the jar, entirely eliminating leakage between positive and negative in the same cell.

Connections between cells are bolted or burned as desired. By bending the straps the bolts are brought over the space between cells, and little corrosion is encountered in their use.



New "Atlantic City" Storage Cell for Signaling Systems.

The jars are quite high, and have sufficient space to allow the entire positive plate to turn to sediment before cleaning is required.

Covers are made of white opal glass, non-hygroscopic and non-absorbent, with completely lapped joints. Spraying and evaporation from these cells is reduced to a minimum.

For supporting the jars upon the shelves, a glass or glazed porcelain tray is used. The tray has a small base giving a maximum leakage path from jar to jar. As installed in a battery, the leakage path from the negative of one cell to the negative of the next cell is over twenty-four inches.

The capacities determined upon as standard, namely, 12 ampere-hours and 15 ampere-hours, are equal respectively to twice and two and one-half times the capacity of the usual six ampere-hour couple. It is believed by the manufacturers that the durability of these cells will exceed twelve years, as compared with an average life of six years for the couple type.

Moreover, when the positive element is worn out, new positives can be installed and the negative continued in use, thus materially reducing the cost of renewals.

While the Westinghouse Storage Battery Company manufactures couple types in all the usual sizes, and has many large installations of such cells in service, it believes that this "Atlantic City" type of cell represents a distinct advance in the art, and is worthy of serious consideration, particularly for fire alarm and police telegraph systems where a maximum of reliability in service is the first requirement.

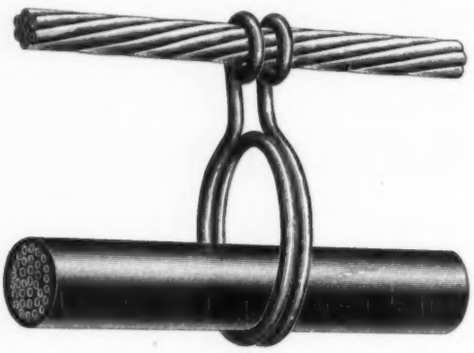
A New Aerial Cable Ring.

The Yonkers Specialty Company, Yonkers, N. Y., manufacturers of aerial rings and cable hangers has recently added to its line of aerial rings, a new style known as type "W" standard aerial ring, which is especially adapted for supporting aerial cables of moderate size, or insulated service wires. This new ring is manufactured of round steel wire, thoroughly galvanized, and is of the closed type, similar to the well known type "B" flat wire ring manufactured by this company. It is said to possess in a marked degree the essential qualities necessary to this class of telephone material, namely, security and resistance to displacement along the support wire when cable or service wires are being installed. The ring fits all sizes of support wires and is clamped in position by a special tool operated by a lineman from a cable chair, riding on the support wire. The rings are first clamped in position on the support wire, at intervals of from 15 to 18 inches apart. The lineman who does this work inserts a small running line, preferably of marlin, which in turn is used to pull through the regular running rope for the cable. The cable reel is set up on jacks in the usual way, at a convenient pole, and fed into the rings by means of a small pulley block known as a "leading-in" block.

A larger block for the running rope is installed at the other end of the run. No other cable blocks or appliances are required. It is mainly for this reason that the cost

per foot of running out aerial cable is the basis of strong claims in favor of this method.

The cable can be pulled out by a team of horses very rapidly. This method is especially satisfactory and convenient in localities where trees and high tension wires



The New Aerial Ring.

are close to the route, because a minimum sag occurs in the aerial cable when it is being run out.

After the run is made the cable is permanently in position for splicing. The use of grease or soft soap on the cable is recommended to decrease friction.

An Appreciation of Walter E. Doolittle.

The accompanying illustration shows how the *Morning Journal* of Lafayette, Ind., appreciates an enterprising manufacturer who has added to the prosperity and prestige of the city in which it is published. Under the caption "Lafayette Men of Affairs," the Journal prints a likeness of Walter E. Doolittle, president of the Sterling Electric Company, showing him in the act of performing an

One of Lafayette's "Men of Affairs."

electrical miracle by means of a magician's wand with which he produces from a horn of plenty (the Sterling Electric Factory) all kinds of telephone apparatus by a "twist of the wrist." It will be observed that the artist has pictured Mr. Doolittle wearing "no cuffs to deceive," which shows a personal acquaintance with the popular head of the Sterling for "Walt," as he is known, is of the straightforward, direct type of man who is candor itself. Perhaps that is why he has succeeded so well, for all his energy is devoted to the work in hand, rather than to creating false impressions.

Mr. Doolittle has made the Sterling Electric Company an important factor in the Independent telephone industry, and he has for years been regarded one of the most prominent men in the trade. A bit of verse that accompanied the illustration, and which explains its meaning, follows:

"Ben Franklin lay within his tomb,
In peace and calm repose,
But when this genius took the stage
Ben in amazement rose."

A Striking Cartoon.

The cartoon reproduced below is being sent out by the Valentine-Clark Company of Chicago and is used by them

through the courtesy of the New York *American*. It seems to be particularly appropriate at this time, as according to all reports prosperity has again returned and the mills and factories are again beginning to run on full time and schedule orders for future delivery.

Recent Ericcson Sales.

The L. M. Ericsson Telephone Manufacturing Company, of Buffalo, N. Y., reports recent switchboard sales to the following companies: One type "D," 140-line board for the Stantonville Telephone Company of Jackson, Tenn., for use at Selmer, Tenn.; a type "D," 140-line board to the Memphis Long Distance Telephone Company, for use at Holly Springs, Miss.; one 200-line type "B" switchboard for the Smyth County Telephone Company, to be used as an addition to its present board at Marion, Va.; a 50-line type "C" board to the Home Telephone Company, Potts Camp, Miss.; one 50-line type "C" switchboard to the F. B. Douglass Telephone Company, Zephyr, N. C., besides several wall type switchboards for rural and farmers' lines.

The company also reports another recent order for 1,000 all steel telephones for export shipment.

The G. V. Cable Cap.

A very useful device now attracting the attention of the telephone trade is the G. V. cable cap, which is used for capping the ends of laterals to exclude the weather. It is said to make a weatherproof joint, but at the same time provides ventilation. The joint around the cable is made so that if the conduit should move from any cause, such as the effect of frost, the weatherproof qualities of the joint are not affected.

While the cost of this device is somewhat more than the

cost of the lead usually used for this purpose, yet the small amount of time taken to install it, reduces the actual cost to a point greatly in favor of the cable cap.

It can be installed in a very short time, as in a recent test, it took but five minutes, counting from the time the workman left the ground until he returned again, a ladder being used in ascending the pole.

The G. V. Cable Cap.

Every cap is adjustable from the smallest to the largest that would ordinarily be placed in a conduit of a given size. For instance, the 3-in. size cap will fit a cable from ¾ in. to 1⅝ ins. in diameter, or any size between. They are also made to fit standard size pipe from 1½ ins. to 4 ins.

The cap has many features which appeal to the practical man. Among them are: The conduit does not have to be threaded; it can be applied after the cable is drawn in, and it is also galvanized, thus preventing rust.

The device is made by the Gillette-Vibber Company of New London, Conn., who also manufacture the well-known G. V. electrical specialties.

AMERICAN CONDUIT COMPANY, 140 Nassau street, New York, has issued a net price list of bituminized fiber conduit, which also contains a handy telegraph code, freight rates and bulletin of conduit and fittings. A return post card is also enclosed with the price list, upon receipt of which the company will mail its 32-page booklet of "Underground Conduit Construction" and its Bulletin No. 275 on the "Cost of Underground Construction."

AUTOMATIC ELECTRIC COMPANY, Chicago, Ill., announces that it has recently received an order for an automatic exchange for Honolulu, Hawaii, equipped initially to serve 2,500 lines, with an ultimate capacity of 10,000 lines; a new order for Missoula, Mont., covers an initial installation of 1,000 lines, with an ultimate capacity of 10,000 lines.

THE DEAN ELECTRIC COMPANY, Elyria, Ohio, has issued a neatly arranged booklet dealing with intercommunicating telephone apparatus. Twenty-nine special points of interest of the Dean system are given and all the apparatus used in it is described in detail.

THE H. B. CAMP COMPANY, manufacturers of vitrified clay conduits, has moved its Chicago office from the Commercial National Bank Building to 445 "The Rookery."

Condensed News Reports

Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems

PERSONAL.

MR. E. LEDVINA has been promoted to the position of manager of the Shawano exchange of the Wisconsin Telephone Company.

MR. HARRY C. O'DELL has been appointed manager of the Haskell Telephone Company at Crowell, Tex. Mr. O'Dell is well known in telephone circles in Illinois and Texas.

MR. R. A. SCHMITT, manager for the Mississippi Valley Telephone Company at Fort Madison, Ia., for over a year, has been transferred to Wapello to take charge of the company's plant at that place.

MR. W. H. WHITMORE, manager for a year of the Home Telephone Company, has resigned his position and will go to Decatur, Ala., where he takes the management of the Independent Telephone Company's exchange.

NEW COMPANIES.

ASHLEY, ILL.—The Ashley Telephone & Telegraph Company is the name of a new company just incorporated at this place, with H. A. Walker, C. H. Walker and M. Key as leaders in the movement. The company is capitalized at $5,000, and will build a system to do a general telephone and telegraph business in this locality.

CLAYTON, ILL.—Articles of incorporation have been filed for the Golden Farmers' Telephone Company, which will erect and maintain a farmers' exchange at Golden. Capital stock is $3,500, divided in 350 shares. The incorporators are Phillip Cain, Scott Taylor and D. G. Buss, and the stockholders and subscribers to the services are made up of over 250 farmers who propose to have an exchange for their rural lines.

HOISINGTON, KAN.—About 25 members of the Russell-Galatia Telephone Company have organized a new company preparatory to cutting the telephone line between Russell and Barton counties when the old Russell-Galatia company will pass out of existence. The permanent officers elected for the new company which will be called the Verbeck-Hoisington Telephone Company, are: J. C. Lowry, president, and Jess Norton, secretary and treasurer. The directors chosen are Frank Stoskopf, J. C. Lowry, Jess Norton, Henry Nuss, E. L. Jacobs, Steve Jones and P. H. Gory. The annual meetings will be held in this city on the first Saturday in November.

LUCAS, KAN.—A telephone company has been organized here with $12,000 capital by F. A. Vopat, J. H. Moore and others.

AUGUSTA, ME.—With a capital stock of $600,000, the Sonora Telephone Company has been incorporated. The promoters are: J. Herbert Miller, E. C. Kilbridge, H. G. Villard, New York; Frank L. Dutton, M. E. Gould, E. M. Thompson and Charles A. Wadsworth, Augusta.

DALTON, MICH.—The Dalton Telephone Company has been incorporated to establish a telephone system in Dalton. The company is capitalized at $5,000 and E. F. Plunkett and C. C. Plant are directors.

STEPHEN, MINN.—The McMahon Telephone Company has been in corporated with a capital stock of $25,000 by Richard McMahon, E. E. Johnson, Thomas B. McMahon and John Peterson.

LOUISVILLE, MISS.—Articles of incorporation have been filed

for the Winston Telephone Company with a capital stock of $10,000 by G. W. Jones, J. D. Fulton and others.

AUSTIN, TEX.—A charter has been issued to the Alton Independent Telephone Co., of Alton. The incorporators are: J. L. Printy, W. D. Wicker, H. K. Baughn, and the capital stock is placed at $1,000.

BELTON, TEX.—The City Council recently granted the right to use the streets to the Rural Telephone Union, which is now being successfully operated in many towns on the western branch of the Santa Fe and has an especially good subscription list in the country adjacent to the towns where there are exchanges. Contractor Harrell, Drs. Spivey and Wilson were here from Killeen and were especially anxious to have connection with Belton because of the large number of residents of Killeen and farmers near by who are using the telephone.

GALVESTON, TEX.—Articles of incorporation have been filed by the Angus Telephone Company of Angus, Navarro County. The capital stock of the new company is $1,230 and the incorporators are: R. Knight, Thomas Ware, and A. H. Birdwell.

SALT LAKE CITY UTAH.—Work has commenced upon the construction of a telephone line between Kamas, Summit county, and Stockmore, in Wasatch county. The line will give telephone communication to the territory between Kamas and the edge of the Uintah reservation country. The corporation which will undertake this work has been organized and financed and the articles of incorporation have been filed with the secretary of state. The officers of the company are C. B. Stewart, president; J. O. Pack, vice-president; John B. Hoyt, secretary and treasurer; John Benson, A. S. Potts, M. L. Corbett and John Larson, directors. The cost of the construction of the line will be between $2,500 and $5,000. It will be of great value to sheepmen in the section to be traversed.

BRIDGEPORT, WASH.—The Pearl Telephone Company has been organized at this place by Scott Colemen.

FINANCIAL.

COLUMBIA, NEB.—The capital stock of the Platte Independent Telephone Company has been increased from $40,000 to $100,000.

ALBANY, N. Y.—The New York Telephone Company has certified to the secretary of state that it has increased its capital stock from $50,000,000 to $100,000,000. The company paid a state tax of $25,000 on the increase. The New York Telephone Company also filed a certificate showing it had merged with the Central New York Telephone and Telegraph Company.

RALEIGH, N. C.—The Raleigh Telephone Company has just paid its regular semi-annual dividend of 3 per cent. Dr. D. E. Everitt is president, R. T. Gowan, secretary-treasurer, and Wm. A. Wynne, general manager of the company.

RIESEVILLE, WIS.—The Dodge County Telephone Company has changed its charter, increasing its capital stock from $975 to $12,000.

SCHLEISINGERVILLE, WIS.—The Washington County Telephone Company, of this place, has increased its capital stock from $5.000 to $25,000.

FRANCHISES.

GIBSON CITY, ILL.—The Drummer Telephone Company, Ford county, has been granted a franchise by the city council of this place. This franchise is the outgrowth of a disagreement between the Gibson Home Telephone Company and the farmers, and the franchise calls for free exchange on all lines of the new company constructed within 15 miles of Gibson City. This will include Fisher, Foosland, Bellflower, Saybrook, Sibley, Melvin, Guthrie and Elliott.

GIBSON CITY, ILL.—The city council has granted the farmers of this section a 13-year franchise for a farmers' telephone line. The franchise calls for the completion of the system within a year.

HARLAN, IA.—A franchise has been granted to the Farmers' Mutual Telephone Company, of Portsmouth, to construct and operate a telephone line in Harlan.

GARNETT, KANS.—S. C. Bybee has been granted a franchise by the council to set poles and string wires for the construction of a telephone system.

CONSTRUCTION.

WALNUT RIDGE, ARK.—The Lawrence County Telephone Company, with headquarters here, is to extend its line to Alicia. It is the intention of the company to make further extensions to Pocahontas and Jonesboro.

BRIDGEPORT, CAL.—A. S. Bryant, the owner of the Bridgeport telephone line, has taken possession of the Copper Mountain and Mono Lake line. He has put a crew of men to work rebuilding the line entirely.

WEAVERVILLE, CAL.—The Forest Service has just extended its Weaverville-Harrison Gulch Telephone line to Bee Gum, Tehama county, a distance of 10 miles.

CHAMPAIGN, ILL.—Improvements that represent an expenditure of close to $30,000 are now under way by the Home Telephone Company, in Champaign and Urbana. About 1,000 new subscribers added to the system recently and several hundred more on the waiting list necessitates these improvements. About 25,000 feet of cable will be laid in the two cities within the next few months. E. E. Daicey, the local manager of the company, who took charge of these duties but a few months ago, reports that since he took hold of the lines hundreds of new subscribers have been added, just as had been done previous to his coming here. He estimates that about 10 subscribers for service are added to the list each day.

CLINTON, ILL.—The National Telephone & Electric Company has made the start upon the trunk line which it proposes to inaugurate in the service between Clinton and Bloomington and the northern connections of the line. A car load of poles has just been received from northern Wisconsin and two more are on the way, while the wire for the reconstruction is already here, as well as the cross arms. It is proposed to give patrons the very best service and already plans have been perfected for new switchboards, which will insure still greater efficiency in the company's service.

MARENGO, ILL.—The directors of the McHenry County Telephone Company, at a recent meeting, voted to make extensive improvements on the local telephone lines, so that Marengo will have a modern system with much better service.

WOODHULL, ILL.—The Woodhull Village Mutual Telephone Company is busy stringing some cable and making other improvements to service.

FORT WAYNE, IND.—The Home Telephone Company has added four more contracts to its list for private branch exchange systems. Fort Wayne concerns are coming to learn the advantage gained by such a system.

LOGANSPORT, IND.—The management of the Santa Fe has just completed the installation of a telephone system for dispatching trains between Chicago and Newton, Kan., a distance of 659 miles.

ATLANTIC, IA.—The Munson Bros. Telephone Company has installed a new switchboard.

ELLSWORTH, KAN.—The Ellsworth County Telephone Company has purchased a two story building on First street and will move its exchange there as soon as the building is remodeled. A new up-to-date switchboard will be installed when the change is made.

PRATT, KAN.—At a recent meeting of the Toll Line Telephone Company it was decided to build a toll line from Hutchinson to Liberal.

BOWLING GREEN, KY.—The Home Telephone Company has established an exchange at Auburn and put it in operation recently. They have a good list of subscribers and fine long distance connections.

HAZARD, KY.—The Perry County Telephone Company will begin the extension of its local lines from Dwarf via Maddox to Cut Shin, 20 miles. Construction material, telephones, etc., will be needed. D. Y. Combs of this place is manager.

HINDMAN, KY.—The Hindman Telephone Company has just secured a franchise to build telephone lines in Knott County. The company will build a line from Hindman via Ball's Fork to Quicksand, a distance of 14 miles, construction work will be begun at once. J. B. Craft is manager.

GREENVILLE, MICH.—The Citizens' Telephone Company has ordered and will install as soon as received, a very much larger and more modern switchboard in its exchange at this place.

HAMPLE, N. D.—The Hample Telephone Company may extend a line to Gwinner, N. D., this fall.

WADENA, MINN.—The Deer Creek Telephone Company is extending its line toward Bluffton, running by way of the Philo farm in Compton.

PORT JERVIS, N. Y.—Arrangements have been made by the Port Jervis Telephone Company for the early installation of a large common battery switchboard for the service in Port Jervis. The switchboard will be in four sections and is equipped for 800 lines. Besides the switchboard the company has ordered more than 20,000 feet of cable and 1,000 new common battery telephones. The growing business of the company demands these improvements.

ROCHESTER, N. Y.—Plans are already being drawn for placing additional equipment to serve a considerable number of subscribers by the Rochester Telephone Co. Several new subexchanges are to be installed in outlying districts and suburbs.

TRUXTON, N. Y.—The Truxton and Cuyler Telephone Company will install a new switchboard and make other improvements.

ONTARIO, ORE.—The Ontario Independent Telephone Company is negotiating for the intallment of its plant at this place.

LINGLESTOWN, PA.—At a recent meeting of the East Hanover Telephone Company, is was decided to extend the telephone line into Fishing Creek Valley as many of the residents have subscribed for telephones.

PIERRE, S. D.—The Pierre & Southeastern Telephone Company now has its lines working as far as McGrey, a distance of 30 miles southeast, and is doing preliminary work toward extending the lines to Wessington Springs and south of that place, early next Spring.

AMARILLO, TEX.—The Oldham Telephone and Telegraph Company, C. C. Tabor, president, 323 Taylor Street, will construct a telephone line and locate plants in and extend lines to Wildorado, Vega and Adrian, Tex.

DECATUR, TEX.—Manager Newcomb of the Independent tele-

(Continued on page 372.)

MEN WANTED!

To our Friends on the Firing Line: Your help is needed to let people know how big and strong and active the Independent telephone business is this Fall.

Business is reviving, and the Independent telephone business enters on a new period of expansion. We believe it is destined to be the greatest public service in the world. We believe its progress will be steady, in building soundly and wisely. We believe in its growth.

We believe that the history of its growth in every part of the country should be recorded in detail, from week to week, in its chosen exponent, TELEPHONY. Because you are a telephone man, and a subscriber to TELEPHONY, we think you agree with us and will work with us.

WE NEED YOUR HELP

We want you to write to us, as editors of your paper, and tell us what progress is being made in your vicinity.

You tell us, and let us tell the world the news from your place. Tell us about new lines that are being built in farming sections, to other towns, and how fast the subscribers' lists are growing. Give the news about switchboard additions and exchange equipment.

Look around, see who is working, and write us what he is doing. We want to help the world keep in touch with you—will you help us do it?

H. B. McMeal Franklin H. Reed

CONDENSED NEWS REPORTS.

(Continued from page 370.)

phone system of Wise County announces the early commencement of a through Independent wire to Fort Worth and connection with Dallas.

TEMPLE, TEX.—The Bell County Telephone Company, which operates an Independent exchange in this city, is preparing to install a modern switchboard of extra large capacity in its local exchange in order to take care of the rapidly increasing business.

VERGENNES, VT.—F. M. Moulton has purchased poles and telephones, and expects before many more weeks to have a new system installed in this place.

POUND, VA.—The Currier Telephone Company will begin at once the construction of a local telephone line from Pound via Indian Creek and Tasso, Va. to Glamorgan, Va., a distance of 13 miles. C. W. Currier of this place is manager.

PALOUSE, WASH.—Dr. G. T. Henwood of this city, who owns an Independent telephone system running east from here along the line of the Washington, Idaho & Montana Railroad has just completed an extension into the Hoodoo mining district, giving him 45 miles of line and giving the mining distrct the first connection with the outside world. Dr. Henwood originally built his line to Princeton 16 miles east about six years ago. Since then he has been extending the line by easy stages.

EAGLE, WIS.—At a recent meeting of the Eagle Telephone Company it was decided to do more building and create additional service during the ensuing year.

ELECTIONS.

MELBOURNE, FLA.—The Tropical Telephone Company held its annual meeting recently and the following were elected directors: C. J. F. Campbell, Dr. Leon A. Peek, George Paddison, E. Svedelius and George R. Lyon, of Waukegan, Ill. Mr. Campbell was chosen manager.

HILLSBORO, ILL.—At a meeting of the stockholders of the People's Mutual Telephone Company, A. K. Vandiver, of Nokomis, and Rufus Cruthis, of Sorrento, were re-elected directors, and Morgan Craig, of Bingham, was elected as an additional director.

KENNEY, ILL.—The stockholders of the Kenney-Chestnut Farmers' Mutual Telephone Company met in annual session recently, and the officers were all re-elected with the exception of the secretary, who resigned on account of poor health, and Wm. Penney was selected to take his place. It was decided to make some improvements soon.

SIGEL, ILL.—At the annual meeting of the Mutual Telephone Company Mr. Chappelier was again elected president; Rahl Zachow, secretary and S. S. Bigler, treasurer. The following four directors were elected: H. Storm, Bernh. Niebrugge, Wm. Peters, and M. Baker.

BRIGHTON, IA.—The stockholders of the Brighton Mutual Telephone Company met in annual session a short time ago. Officers and directors were elected at this meeting, and as they now stand are: President, M. C. Terry; vice-president, J. W. Myers; secretary, S. H. Prizer; treasurer, C. H. Lloyd; directors, C. C. Heacock, W. S. Parks, R. E. L. McClintic, D. Hessletine, Jr., E. B. Sinn, John J. Adrian, T. B. Davison, J. A. Luers, W. Hessletine, W. Weible, J. W. Brinton and O. Fritz. The officers' reports showed the company to be in good standing.

OAKLAND, IA.—The Mutual Telephone Company held its annual meeting a short time ago. Much enthusiasm was manifested in the meeting by members of the board of directors and stockholders and also by outsiders, and more enthusiastic work was urged on the part of the members. This company has been doing very good work. It was organized less than two years ago with 114 telephones and at the present time is serving 304 subscribers. Wm. Jarrett was re-elected president; Joshua Spalti, vice-president; J. H. Spalti, secretary, and W. W. McRory, treasurer. Directors are Clark Hannah and P. F. Schoening.

RIVERSIDE, IA.—The stockholders of the Union Dale Telephone Company held a meeting recently and elected the following as their board of directors: Horace Steele, D. A. Fesler, Frank Critz, George W. Grecian, I. C. Steele and Frank Knotek. This board has elected the following officers: Horace Steele, president; D. A. Fesler, secretary, and Frank Critz, treasurer.

BLUFF CITY, KAN.—At a stockholders' meeting of the Bluff City Telephone Company, J. F. Davidson, J. P. Hinton, T. G. Dulany, W. C. Kethering, Dr. J. M. Baskett, L. G. Hendron and E. B. Marmaduke were elected directors. The company is planning some extensive improvements in the near future. A carload of cable has already been received, and all lines will be enclosed in cable, which will greatly improve the service. The stock-

NORTONVILLE, KAN.—The Prairie View Farmers' Mutual Telephone Company, at the annual meeting, elected the same officers for another term: W. L. Heineken, president; Mr. Freeland, vice-president; John Low, treasurer, and W. H. Williams for secretary. The reports of the different officers were very satisfactory and the company as a whole is in a very good condition.

PRATT, KAN.—At a recent meeting of the new Toll Line Telephone Company, officers were elected as follows: F. L. Bennett of Meade, president; R. L. Burns of Hutchinson, secretary and treasurer, and C. A. Sloan of Pratt, superintendent.

holders are also considering extending the toll lines, carrying service to several new points.

BROWNING, MO.—At the recent stockholders' meeting of the Browning Telephone Company, A. M. Elliott, J. D. Knifong, V. Fields, John Gilmer and G. R. Duncan were elected directors to serve the company's interests for the ensuing year.

GUILFORD, N. Y.—The directors elected recently to serve the Riverside Telephone Company, at a recent meeting of the stockholdrs, are D. P. Chapman, of Wellsbridge; E. H. Burleson and L. A. Foster, of Unadilla; J. J. Waters and J. Jameson, of Sidney; M. J. Strong, of Bainbridge, and A. C. Foote, of Guilford.

HACKETTSTOWN, N. J.—The Hackettstown Telephone and Telegraph Company, elected the following persons as officers and directors at the annual meeting: W. A. Hoffman, president; W. J. Barker, vice-president; Chas. Dedrick, secretary; J. M. Saunders, treasurer. Directors: S. B. Darnell, A. G. Danks, T. B. Howell, Wm. Lanterman, Dr. J. W. Curtis.

TRUXTON, N. Y.—The annual meeting of the stockholders of the Truxton and Cheningo Telephone Company was held recently It was decided to incorporate the company and steps will be at once taken for that purpose. Officers for the ensuing year were chosen as follows: President, John J. Miller; secretary, Charles W. Beattie; treasurer, Alva R. Muller. Directors: William Bell; Chauncey H. Webster; Albert Curtis.

MISCELLANEOUS.

HOMER, ILL.—It is reported that the White Telephone Company will probably go into new hands at no distant date. It is stated that the Douglas County Telephone Company, of which Mr. Hamilton is manager, will probably take control of it, as the company has been considering the proposition made. Mr. White seeks to sell his interests in the company in order that he may leave the city on account of health.

SULLIVAN, ILL.—The City Council has again taken up the matter of granting the Sullivan Mutual Telephone Company a new franchise. The franchise calls for a time limit of 40 years, and no limit as to amount to be charged for service is stated. The Council passed the petition, and it is now in the hands of the mayor, for his veto or signature.

LISBON, OHIO.—Columbiana may have a new Independent telephone company. There has been more or less dissatisfaction with the present service and it is thought that a local line connected with the Beaver and Fairfield township lines will give better service.

NORTHEAST, PA.—The Mutual Benefit Telephone Company and the Independent Telephone Company have signed articles of consolidation, which will take effect Jan. 1, 1910. The new company will be known as the Independent Telephone Company and at the opening of the year will spend about $5,000 in improvement of equipment and service. A. I. Loop has been elected secretary of the new company.

BRADY, TEX.—The Rochelle Telephone Exchange has been sold by A. D. Gentry to E. P. McGarrity of Como. Mr. McGarrity took immediate charge . Mr. Gentry will go into the cotton business.

DAVENPORT, WASH.—The Farm and City Telephone Company now occupies its own building which was recently completed. The growth of this company has been phenomenal. J. ... Hanson, present manager, began years ago with a system that ran over the barbed fence wires of the country districts, and by attention to business and good service he has built up the present system, which would be a credit to a much larger place.

HARTFORD, WIS.—A deal of some importance was completed at Schleisingerville when the Washington County Telephone Company bought out the Cedar Lake Telephone Company for $15,000. The Washington County company increased its capital stock from $5,000 to $25,000. The office and central of the company will be at Schleisingerville hereafter.

WINNIPEG, MAN., CAN.—A total of 6,960 new applications have been made to the Provincial Telephone Commissioners since January 1st. Of these, 5,790 have been accepted, of which 3,240 are in the rural districts, while the remaining 2,550 are in towns. The Commissioners think it necessary to construct 4,000 miles of new lines this year.

GENEVA, SWITZERLAND.—The highest telephone line in the world, running to the Queen Margherita observatory, on Mount Rosa, more than 15,000 ft. high, was placed in operation recently. The observatory and the telephone line, which has been constructed at the expense of the queen, took six years to complete. The new line will be of great help to Alpinists in distress on Monte Rosa.

UNDERGROUND.

PEORIA, ILL.—The City Council has announced that it will at once take steps to make the Central Union Telephone Company place its wires underground within the fire limits.

ELLSWORTH, KAN.—The Ellsworth County Telephone Company has been granted permission by the city to place its wires underground whenever and wherever it sees fit to do so. In time the company wants to get all its lines in the city under ground. A beginning will be made at once by placing its cables and heavy lines underground from the present location at the central station to the location of the new station.

BERLIN, N. H.—The Coos Telephone Company is at work laying its cables underground from Postoffice Square to Mason street.